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THE BULLETIN

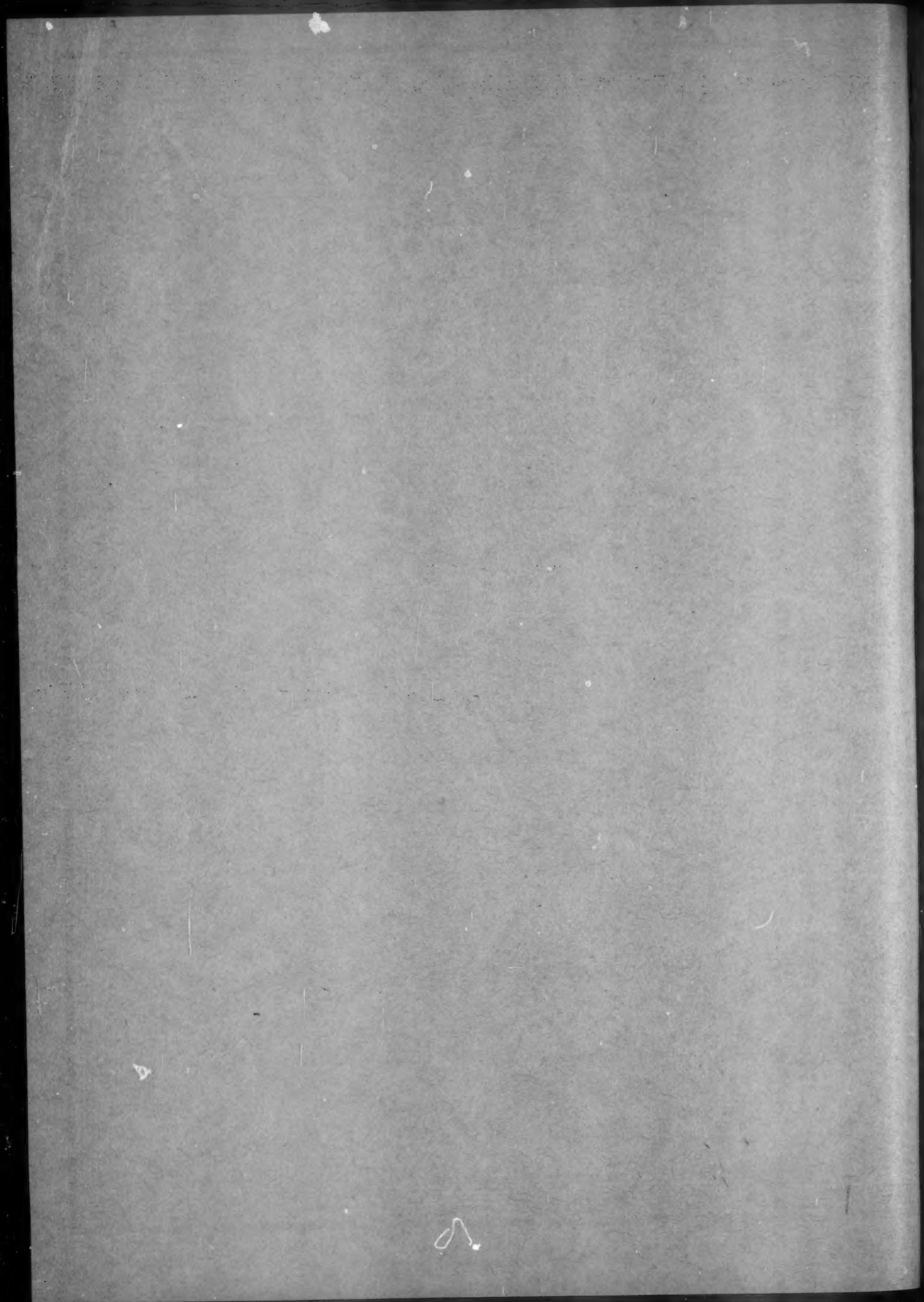
OF THE



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MARCH - APRIL, 1945

NUMBER 2



THE BULLETIN

OF THE



The Bulletin is published by the American Society of Hospital Pharmacists, a national organization devoted to the profession of Hospital Pharmacy, dedicated to the interests of the Hospital Pharmacist, and pledged to co-operate with the American Pharmaceutical Association with which it is affiliated.

Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the Public Health profession, will be accepted if they are of general interest to the hospital pharmacist. The Editor reserves the right to revise all material submitted, if necessary.

Manuscripts submitted for publication should be typewritten in double spacing on one side of paper 8 $\frac{1}{2}$ " x 11". Whenever possible a photograph, drawing, or printed form to illustrate the topic that is discussed in the article should be included.

Vol. 2 March - April 1945 No. 2

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Correspondence



Sirs: I wish to thank you for publishing our need for a hospital pharmacist in The Bulletin of the American Society of Hospital Pharmacists. I am pleased to tell you that it has brought results, and we now have a registered pharmacist-Mr. Thomas Sisk- in charge of the pharmacy.

I enjoy reading The Bulletin very much, and congratulate you and your collaborators on the fine piece of work you are doing. I thank you for your co-operation and assistance.

Sister M. Adelaide
Superintendent

St. Joseph Hospital
Lorain, Ohio

Sirs: I shall try to get something written for publication in The Bulletin soon. I am proud of our Society and hope it and its members prosper during 1945.

Muriel S. Larson

Leahi Hospital
Honolulu

Sirs: Enclosed is a money order for \$3.00 for current dues of the American Society of Hospital Pharmacists. It is very encouraging to observe the efforts of the Association toward establishing a higher standard of practice for pharmacy in hospitals.

Lee R. Moyer

Colon Hospital
Cristobal, C.Z.

Sirs: As you see by my application I am located at Hagerstown. I have been here since February 15, and I find the hospital a fine place to work. As I am the first pharmacist they have had, there is plenty of work to be done, but the Superintendent is a willing worker and very helpful to me. He was a pharmacist some years ago. Thank you for giving me the lead to a hospital where it is so pleasant to work. Of course I would like to be associated with the American Society of Hospital Pharmacists.

Harriet B. Finney

Washington Co. Hospital
Hagerstown, Md.

Sirs: Would you please recommend to me a good formula for Baby Oil? I am desirous of manufacturing this for use in my hospital, and have had difficulty in finding a suitable formula.

Marjorie B. Bollschweiler

Perth Amboy
General Hospital, N.J.

A GOOD FORMULA FOR A BABY OIL CONSISTS OF A MIXTURE OF LIGHT MINERAL OIL, A VEGETABLE OIL, AN ANTISEPTIC AND A PERFUME. CETYL ALCOHOL, CHOLESTEROL, LANOLIN, AND ETHYL STEARATE¹ ARE OTHER SUBSTANCES THAT MAY BE USED AS AN EMOLLIENT WITH OR IN PLACE OF VEGETABLE OILS. OF THE VEGETABLE OILS MORRISON² SELECTED CORN OIL AS THE MOST SUITABLE BECAUSE IT IS RELATIVELY STABLE, INEXPENSIVE, AND NON-IRRITATING. OTHERS³ HAVE SUGGESTED PEANUT OIL, SESAME OIL, OLIVE OIL, COTTONSEED OIL.

BABY OILS ARE NOT USED TO MAKE THE INFANT'S SKIN STILL SOFTER AND MORE FLEXIBLE.⁴ THIS IS A COMMON MISCONCEPTION. BABY OILS HAVE TWO PRINCIPAL PURPOSES. THEY ACT AS LUBRICANTS AND EMOLLIENTS. THE MAIN PURPOSE FOR INCLUSION OF MINERAL OIL IN THE FORMULA IS TO SERVE AS A LUBRICANT OF MOIST SKIN SURFACES IN CONTACT SO THEY MAY MOVE FREELY WITHOUT CHAFING. THERE IS LITTLE ABSORPTION OF MINERAL OIL THROUGH THE SKIN. IN CONTRAST, VEGETABLE OILS AND THEIR SUBSTITUTES ACT BY BEING ABSORBED THROUGH THE SKIN, AND SINCE THEY PENETRATE THE SKIN, THEY LEAVE A SOFT BLAND COATING AFTER THE MINERAL OIL HAS BEEN RUBBED AWAY. THIS ABSORBED OIL ACTS AS A MOISTURE-REPELLENT COATING WHICH PREVENTS SOGGINESS AND CONSEQUENT CHAFING.

THE USUAL ANTISEPTICS EMPLOYED IN BABY OILS INCLUDE OXYQUINOLINE BASE AND OXYQUINOLINE BENZOATE, USUALLY IN A CONCENTRATION OF 0.1%. SOME BELIEVE THAT ANTISEPTIC ACTION IS NOT NECESSARY OR EVEN DESIRABLE, HOWEVER THE CONSENSUS SEEMS TO BE THAT THE INCLUSION OF AN ANTISEPTIC IS DESIRABLE. A MINIMUM OF PERFUME SHOULD BE USED SINCE IT IS FELT THAT PERFUMES, ALONG WITH ANTISEPTICS ARE THE CHIEF CAUSES OF DERMATITIS RESULTING FROM THE USE OF A BABY OIL.

LIGHT MINERAL OIL 80% AND VEGETABLE OIL 20% ARE THE PROPORTIONS MOST OFTEN RECOMMENDED FOR BABY OIL FORMULATION. HOWEVER IT IS TRUE THAT THE PROPORTIONS USED DO VARY CONSIDERABLY AND THEY MAY BE ADJUSTED TO SUIT THE INDIVIDUAL INCLINATION.

MORRISON AT THE UNIVERSITY OF ILLINOIS RESEARCH AND EDUCATIONAL HOSPITAL DEVELOPED THE FOLLOWING FORMULA WHICH IS USED ALSO AT ST. LUKE'S IN CLEVELAND.

(CONTINUED ON PAGE 59)



EDITORIAL

Today, as never before, Hospital Pharmacy is indeed on the march. This is indicated by the formation, growth and development of the many organized groups of hospital pharmacists throughout the country. It is not too important, at this time, that many of these organizations are not affiliated with the American Society of Hospital Pharmacists, and through it, with the American Pharmaceutical Association. It is, however, vitally significant that pharmacists in hospitals are at last awakening to the value of organization and co-operation among themselves.

The fact that the members of many of these organizations see no value in affiliation with the National Associations presents a formidable challenge to the policy making committees of both the American Pharmaceutical Association and the American Society of Hospital Pharmacists. Unless each of these bodies can, by deeds, concretely demonstrate their value to all hospital pharmacists, they cannot expect—they have no right to receive—the support of the Hospital Pharmacists. On the other hand it is equally true that when the National Associations do demonstrate that they are earnestly attempting to effect the advancement of the individual pharmacist and the profession of Pharmacy, these organizations should be actively and strongly supported.

For too long the American Pharmaceutical Association has been handicapped by lassitude on the part of pharmacists. It is true that the fault has not rested entirely with the pharmacists. However, since the American Pharmaceutical Association is now under new leadership, it is only just that all pharmacists should show the new leaders they are behind them with active support for the future course of Pharmacy. Dr. Fischelis has all the qualifications necessary to build a powerful, active, vital association. However, he cannot be expected to do this alone. He must be supported and encouraged by a large group of the Nation's pharmacists. The strength of a leader and of the organization he leads comes principally from the "grass roots", the members of the profession.

In the preceding issue of The Bulletin sixteen organizations of hospital pharmacists were listed. In this issue there are two additional groups mentioned. Of these, five—The Hospital Pharmacists of Chicago-land, The Cleveland Society of Hospital

Pharmacists, The Buffalo Chapter of the American Society of Hospital Pharmacists, The Ohio Society of Hospital Pharmacists, and The Hospital Pharmacists of the Midwest—are now affiliated with the National Society. The Massachusetts Society has indicated that it will become affiliated in the near future.

At present the membership of the Society is rapidly approaching the 500 mark. If the present rate of growth continues, The Society shall have more than doubled its membership by the time of the Annual Meeting in September. The credit for this fine showing belongs to the Membership Committee, headed by Geraldine Stockert, the Organization Committee led by Hans Hansen, and to the many hospital pharmacists throughout the country who have contributed so much to the growth of our Society by their unselfish efforts on its behalf.

This new spirit of co-operation among hospital pharmacists is personified in a letter written by Chief Pharmacist Albert Lauve of Charity Hospital. Mr. Lauve writes, "The principal objective of our group here in New Orleans is to encourage the individual pharmacist to greater accomplishment. This, of course, can be accomplished only if you have the necessary equipment to make possible this service. We work together. We have no secrets and share willingly any information we have."

It is this spirit which has made possible the formation of the strong, active unit, The Louisiana Society of Hospital Pharmacists. The success of this spirit is evidenced by the fact that in a relatively short time the Louisiana Society has been able to enroll approximately 40% of the state's hospital pharmacists into the National Society. This same spirit of co-operation and mutual encouragement accounts for much of the success of the powerful Ohio Society of Hospital Pharmacists. Over 75% of the Hospital Pharmacists of Ohio are now members of the American Society of Hospital Pharmacists, and through it, members of the American Pharmaceutical Association.

We know this spirit is spreading among Hospital Pharmacists. We can see a new spirit and confidence that is steadily growing. The feeling of isolation and futility is rapidly disappearing. Yes, Hospital Pharmacy is indeed on the march.

WASHABLE OINTMENT BASES

By E.L. Cataline, Ph.D.
Assistant Professor of Pharmacy
University of Michigan, College of Pharmacy

Although ointments have been used since the earliest times, they are probably less well understood than any other class of medicinal preparations. Because of the lack of knowledge concerning the chemistry and physiology of the skin, conceptions of the mode of action of ointments are largely speculative and, in consequence, ointment formulation is primarily an empiric process. However, developments of the past few decades have made it possible better to evaluate ointment bases in relation to their dermatological effects. As a result there is a current trend toward the elimination of the greasy, water-insoluble and generally disagreeable bases such as petrolatum, lard, wool fat, suet, goose grease and other animal and vegetable fats which have for so long been the only materials available. The development of a large number of synthetic emulsifying agents has made it possible to formulate emulsified ointment bases which appear to be far superior to the greases.

Greasy bases act as insulating layers inhibiting heat loss from the skin and are, thus, contraindicated in acute inflammatory conditions; are immiscible with water and, therefore, poor carriers of water-soluble medication; inhibit the action of bacteriostatic medicaments; are cosmetically unsightly; and leave stains on clothing and bedding which are often removed only with difficulty. In contrast, the "washable", emulsified ointment bases are virtually free from these disadvantages and, in addition, are therapeutically efficient; penetrating to the pathological process; usually neutral in reaction or nearly so; non-irritating; non-dehydrating; washable, thereby being easily removed from the skin with warm water; and are relatively stable. For these reasons, the "washable" bases are currently receiving considerable attention and should continue to increase in popularity until they may largely replace the greasy bases as carriers of medication.

It is not the intent of this review to list all the emulsifying agents available or emulsified bases proposed nor would it be possible to do so in the space allotted. Rather, a few representative and illustrative bases are mentioned below and their general applicability and some incompatibilities discussed. For ease of discussion these bases are classified according to the emulsifying agent employed.

SODIUM LAURYL SULFATE

Sodium lauryl sulfate* (abbreviated SLS) is a widely used detergent and wetting agent. It is also a powerful emulsifying agent, effective in the presence of alkali and metal salts and low concentrations of acids. It is virtually non-toxic and no more irritating to sensitive membranes than soap. Upon continued use it may produce an unpleasant irritation of mucous membranes and continuous use on the conjunctiva and urethra should be avoided.

Mumford Base (Modified)

Cetyl Alcohol	6.4
Stearyl Alcohol	6.4
Sod. Lauryl Sulf.	1.5
White Petrolatum	14.3
Liquid Petrolatum	21.4
Propylene Glycol	10.0
Water	40.0
	100.0

Beeler Base

Sod. Lauryl Sulf.	2.0
Cetyl Alcohol	15.0
White Wax	1.0
Propylene Glycol	10.0
Water	72.0
	100.0

These bases are usually prepared in the following manner. Dissolve the sodium lauryl sulfate in the water heated to 60-70°C. on a water bath. Melt the other ingredients at 60-70°C. and add to the aqueous phase with mechanical stirring. Heat and stir for ten minutes, remove from the bath and stir until cool. Medication may be dissolved in the appropriate phase before mixing or incorporated in the finished base.

* Duponol C (By DuPont)
Orvus WA (By Proctor and Gamble)



PREPARING A WASHABLE OINTMENT BASE

Gibson Base

Sodium Lauryl Sulfate	0.5
Cetyl Alcohol	8.0
White Petrolatum	20.0

This base is particularly useful for extemporaneous work. The three ingredients are melted together on a water bath and stirred until cool. This constitutes the stock base. The amount of water in the finished ointment is arbitrarily set at 35%. The difference between the weight of the prescribed quantity of ointment and the combined weight of water and medicament is the weight of base to be used. The medication is incorporated in the base on a slab and the water, warmed a few degrees, is worked in gradually.

For the most part, these bases produce stable and washable ointments with the usual quantities of the commonly used medicaments. They are, however, incompatible with strong acids. Weaker acids, such as salicylic and benzoic acids, yield ointments which may slowly soften. Mottled greenish-hued ointments are obtained when coal tar is incorporated in the Mumford and Gibson bases, but, in the Beeler base, which contains no petrolatum, the coal tar is uniformly distributed and a more presentable ointment results.

HYDROXYETHYLAMINES AND SALTS

Triethanolamine and tri-isopropanolamine and their salts with high molecular weight organic acids have become popular in the cosmetic industry and for the formulation of ointments. These substances do not exhibit the same range of stability as does sodium lauryl sulfate. They react with metal salts and the organic acids of the hydroxyethylamine salts are rather easily displaced by mineral acids and most organic acids. However, the very desirable cosmetic qualities of hydroxyalkylamine creams recommend their use with less reactive medicaments. Triethanolamine gradually darkens on standing while tri-isopropanolamine does not. For this reason the latter is often preferred.

1. Triethanolamine	0.7%
2. Stearic Acid	14.0%
3. Cetyl Alcohol	3.0%
4. Sod. Lauryl Sulf.	0.5%
5. Glycerin	5.0%
6. Water	76.8%
	100.0%

Dissolve 4 and 5 in 6 and heat to 60-70°C. Melt 1, 2 and 3 on a water bath at 60-70°C. and add the mixture to the aqueous phase with stirring. Stir until cool. Medication may be incorporated as indicated above.

Medicaments such as phenol, Balsam of Peru, coal tar, and sulfur give satisfactory ointments with this base but acid

substances, even benzoic and salicylic acids yield lumpy products as do Burow's Solution and ammoniated mercury.

GLYCERYL MONOSTEARATE BASES

Glyceryl monostearate possesses advantages over emulsifiers in that emulsions promoted by it may be melted and reworked if necessary; it is available in an acid-resistant form*, and glyceryl monostearate creams are less affected by changes in temperature than are most other creams. It is usually necessary to add preservative to glyceryl monostearate creams. The para-hydroxybenzoic acid esters (Para-septs; Tegasepts) and sodium benzoate have been found satisfactory for this purpose.

A glyceryl monostearate base which seems to be capable of wide application follows.

Glyceryl monostearate	14 Gm.
Petrolatum	6 Gm.
Paraffin	2 Gm.
Liquid Petrolatum	30 Gm.
Distilled Water	48 Gm.
	100 Gm.

Melt the first four substances at 60-70°C., add the water, previously heated to the same temperature and stir mechanically until cool. Medicaments may be added as previously indicated. Employment of an acid-stabilized glyceryl monostearate will permit the use of acid ingredients to a certain extent.

Deodorant Cream

1. Glyceryl monostearate (acid-stabilized)	16.0 Gm.
2. Liquid Petrolatum	4.0 cc.
3. Spermaceti	5.0 Gm.
4. Propylene Glycol	15.0 cc.
5. Aluminum Sulfocarbolate	15.0 Gm.
6. Aqua Destillata	18.0 cc.
7. Aqua Destillata	24.0 cc.
8. Cetyl Alcohol	3.0 Gm.

Combine 1, 2, 3, 4, 7, and 8 and bring to a boil. Stir while cooling to room temperature. Dissolve 5 in 6. Work the aqueous solution into the emulsion gradually. Allow the cream to stand overnight and mill.

It is of interest to note that all of the plain bases mentioned above have been found valuable for the preparation of ointments of sulfonamides.

Other emulsifying agents which might be mentioned include pectin, silica gel, sulfated hydrogenated castor oil and bentonite. Recent studies indicate that these may become important in the preparation of washable ointment bases. Pectin, in addition to being a good emulsifying agent is said to possess a healing effect. Bentonite is of interest because it may be

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*Tegacid (The Goldschmidt Corp.)

THE FUTURE HOLDS PROMISE FOR HOSPITAL PHARMACY

Dr. Earl R. Series
Chairman-Elect

American Pharmaceutical Association



DR. EARL R. SERIES

In considering the topic under discussion, I think it might be well for us to give due consideration to the scope of the term "the Pharmacy" as it relates to that portion of a hospital wherein pharmaceutical procedures are established. In some hospitals it may be comprised of a single room wherein physicians' prescriptions are compounded, with a minor additional service of filling orders for pharmaceuticals which are used throughout the various floor services. In many instances the staff consists of a single individual only partially trained in the art and science of Pharmacy. In others it may have listed among its personnel a number of individuals of varied qualifications and training; but whatever the personnel, it has a very definite function to perform.

The practice of Pharmacy, as we know it today, has passed through many trials and tribulations, and it is doubtful that even those who have devoted a lifetime of study to its educational program, its public health service, and its economic stability, are particularly convinced of its dignity as a profession. Under such circumstances we now find ourselves charged with a grave responsibility with reference to the position which the Hospital Pharmacy occupies in relation to the service which the hospital renders as a public health agency.

About a year ago it was my privilege to preview a film designed to portray the value of the hospital to the community which it serves. The film depicted in detail every step concerning the admission of a patient to the hospital, his subsequent operative care, the nursing service, and the function of the dietitian; in short, every effort possible had been expended to glorify the humanitarian service which a hospital represents, but on no occasion was there the slightest reference made to the Hospital Pharmacist, the value of drug standardization, nor the safeguard which the unseen hand of the Pharmacist provides. "Why", may you ask, "was so much money expended in the development of such a fine educational film, with all of the functions of the hospital, excepting

that of the Pharmacy, depicted?" There can be but one answer. We of the profession have failed to dignify the service which we have rendered, or to properly interpret the scientific training, which we are presumed to have received, into commendable action. We are oftentimes apologetic for our very existence, and in consequence we have accepted quarters in the hospital, which, if photographed, would reveal a very dismal picture. Even the physical location within the building segregates the personnel of the Hospital Pharmacy from the professional men whom they strive to serve, and in consequence the problems which are presumed to be the reason for this discussion never arrive at a point of conciliation.

I do not wish to convey the idea that the Hospital Pharmacist should assume a belligerent attitude with reference to prescription compounding, stock supplies, or the distribution of drugs to the patient, but rather that he should be prepared to offer advice and counsel with reference to all phases of pharmaceutical necessity. The Pharmacist knows better than anyone else the source of supply, the method of storage, and the conveniences of dispensing, which afford the patient security in the medication which the physician has established after rational diagnosis.

From a legal standpoint, the Pharmacist assumes a grave responsibility with reference to all conditions of malpractice, under which the therapeutic agent prescribed may fail of its mission, or establish deleterious results. This function of the Pharmacist is well-recognized by the statutes of the several states under which he is licensed to practice, as well as by those agencies of the federal government which are charged with the enforcement of the Narcotic and the Food, Drug and Cosmetic Acts. It is to the everlasting credit of the Pharmacist that out of more than sixty thousand narcotic licenses issued during 1940, only thirty-four investigations were required by the federal narcotic agents, and in only six cases were there violations of sufficient character to require penalties. On this score, it is clear that the Pharmacist occupies a very

CONCLUDED ON PAGE 60

HOSPITAL PHARMACISTS' SALARY SURVEY

You would not believe it, but it is true--Pharmacists in some hospitals earn less than one-half the salary paid to hospital pharmacists in other institutions of the same general type and size. Are you surprised to learn that many pharmacists in 500 bed hospitals receive considerably more than those holding similar positions in hospitals over three times as large? These and other striking facts are brought out by a study of a preliminary survey of hospital pharmacists' salaries taken at the 1944 annual meeting of the American Society of Hospital Pharmacists by Leo Mossman, Chief Pharmacist at the Holzer Hospital, Gallipolis, Ohio. While the results of this survey are not to be regarded as conclusive, for there were only about sixty returns and in some cases maintenance was provided in addition to the regular salary, nevertheless, they are interesting. They also show a vital need for further study of this general problem.

Survey Results

For instance, the survey shows that in a hospital of less than 100 beds, the one pharmacist reporting was paid \$3600 per year, a figure which is above the average pay for the group. In hospitals from 100-200 beds the average pay for the pharmacist was \$2500 per year. The range in this group was from a high of \$3600 per year to a low of \$2000 per year. Returns from the 200-300 bed hospitals were essentially the same as the last preceding figures, with the exception that the average salary was \$2700; and, also, there was a slightly greater range between the high and low pay. Surprisingly enough, the average salary of pharmacists in hospitals of 300-400 beds was less than that of the 100-200 and 200-300 group. The lowest pay in this category was \$1500 per year, while the highest pay was \$3000 per year with an average salary of \$2300 for this group.

We are happy to say the picture looks brighter in the 400-500 bed hospital, for the average pay of the pharmacist is \$3000 per year, with a low of \$2800 and a high of \$4400.

In the 500-600 bed hospital the top pay for the pharmacist again takes a drop, this time going to \$3600 per year, with an average of \$3000 and a low of \$2600.

Thus the maximum pay for the pharmacists in hospitals of 300-400 beds was \$600 less than that of the pharmacists in

smaller hospitals; and, in addition, the average pay was \$400 per year lower.

There is no good explanation for this great fluctuation of salaries. Admittedly some of the variation is due to the (different) abilities of the pharmacists occupying similar positions. However, we believe that much of the difference is due to a lack of specific information by the pharmacists as to the general level of pay in other hospital pharmacy positions of similar responsibility. Undoubtedly some of the difference is due to a similar lack on the part of the hospital administration. These situations should be corrected.

In the 700-800 bed hospital, the maximum pay for pharmacists is \$3300 per year; the minimum pay reported for this group is \$2300 per year while the average yearly salary is \$2900.

There were no salaries of pharmacists reported from hospitals of 800-1600 beds; however, in the 1600-1800 bed hospital the average salary is lower than all but two of the categories so far discussed. The average salary in this case is \$2600 per year, the minimum salary is \$2000 per year while the maximum yearly salary in this group is \$3000.

The American Society of Hospital Pharmacists would like to gather general data on hospital pharmacists' salaries. It is not interested in the specific salaries of its individual members. The Society can be in a position to speak for hospital pharmacists only if it has at hand representative data concerning the many aspects of hospital pharmacy. Remuneration is but one of these aspects.

In addition, we must compile data on other problems of hospital pharmacy. These include information required for the proper planning of the physical layout of the department, including required floor space; location, equipment and so forth. Also, we must gather information on administrative procedures, personnel training, manufacturing and a multitude of other information which when compiled and published will be useful to all hospital pharmacists.

We cannot do this without your help. Mr. Mossman has prepared a questionnaire on remuneration to be filled out and returned to him by all members of the Society. There is no place on the questionnaire for your name or the name of your hospital. All the information you are asked to give is to be given anonymously.

If sufficient returns are received, the data will be analyzed and published. Your cooperation in this questionnaire will determine whether it is worthwhile to (continued on page 60)



CURRENT LITERATURE OF HOSPITAL PHARMACY



HOSPITAL MANAGEMENT (February, 1945)

"More About Efficiency and War Time Economy in Hospital Pharmacy" by Joseph Ace Witt, Chief Pharmacist, Garfield Park Community Hospital, Chicago, Illinois - Suggestions for the hospital pharmacist to become more efficient by careful planning of time. page 88

"How the Small Hospital Can Have Services of a Pharmacist" by Eugene H. Bradley, Administrative Assistant, Lincoln Hospital, Durham, North Carolina - A discussion emphasizing the importance of every hospital having the services of a professional pharmacist and suggestions for providing pharmaceutical and other technical services not available in many small hospitals. page 94

"A Hospital Pharmacist's Diary" by Paul Cole, Chief Pharmacist, Michael Reese Hospital, Chicago, Illinois - Surveys the hospital scene. page 98

HOSPITAL MANAGEMENT (March, 1945)

"What System of Recording and Checking Narcotics Shall Hospitals Use?" by Hans S. Hansen, Chief Pharmacist, Grant Hospital, Chicago, Illinois - A simple and infallible method for checking narcotics showing forms as used at Grant Hospital. page 92

"More About Efficiency, War Time Economy in Hospital Pharmacy" by Joseph Ace Witt - A continuation of the article which appeared in the February issue of Hospital Management - Practical suggestions for the hospital pharmacist in carrying out his duties are given. page 96

"A Hospital Pharmacist's Diary" by Paul Cole, - Surveys the hospital scene. page 100

HOSPITALS (April, 1945)

"When the Pharmaceutical Salesman Calls" by Frank C. Sutton, M.D., Assistant Medical Director, Rochester, N.Y. General Hospital - A discussion of the policies a hospital may maintain governing visits of pharmaceutical representatives. page 64

MODERN HOSPITAL (March, 1945)

"There is Profit in The Pharmacy" by Henry M. Burlage, Professor of Pharmacy, University of North Carolina. - A challenge to hospital administrators as to the importance that every hospital have a pharmacist - the results will pay. page 94

"The First Step to Efficiency" by Walter Frazier, Pharmacist, Springfield City Hospital, Springfield, Ohio. - A discussion of stock organization in the hospital pharmacy, the main objects being convenience, simplicity, proper storage, appearance, index and control. A detailed method of stock organization as carried out at Springfield City Hospital is given. page 90

SOUTHERN HOSPITALS (February, 1945)

"With the Hospital Pharmacist" by D. O. McClusky, Jr. Chief Pharmacist, South Highlands Infirmary, Birmingham, Alabama - monthly report on hospital pharmacy. page 74

"Pharmacy Problems in Both Charity and Pay Hospitals" by Harry C. Hillhouse, Chief Pharmacist, Hillman and Jefferson Hospital, Birmingham, Alabama. The different pharmacy problems confronting charity and pay hospitals. page 76

SOUTHERN HOSPITALS (March, 1945)

"With the Hospital Pharmacist" by D. O. McClusky, Jr. - A description of St. Vincent's Hospital Pharmacy, Birmingham, Alabama. page 82

HOSPITAL TOPICS (March, 1945)

"The Role of Pharmacy in the Modern Hospital" by William G. Shoemaker, Pharmacist, Women's Medical College Hospital of Philadelphia. - A discussion of policies carried out in hospital pharmacies with suggestions for the pharmacist. page 22

JOURNAL AMERICAN PHARMACEUTICAL

ASSOCIATION (March, 1945) Practical ed. "American Society of Hospital Pharmacists" - an editorial by Don E. Francke, Chief Pharmacist, University Hospital,

concluded on page 58 -

NOTES AND SUGGESTIONS

LABEL HOLDER

A time-saving suggestion for handling labels on typewriters which have no spring clamps to hold the label in place is offered by Pharmacist James D. Jones of the Veterans Hospital, San Fernando, California. The holder is made by taking a gummed label approximately 4" by 1" and cutting two slits $\frac{1}{2}$ " deep in the long side of the label, spacing them so that the largest label used will fit between the slits. Turn that part of the label between the slits downward and stick the gummed surfaces together. The label holder is now ready to attach to the typewriter roll. The gummed surface is wet and then the label holder is fastened in a horizontal position to the typewriter roll. The tab which has been creased and turned under furnishes an unglued compartment into which labels to be typed may easily be inserted and removed.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X VETERANS ADMINISTRATION X
X DIRECTIONS X
X NO. _____ DATE _____ X
X DR. _____ X
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

The above label holder does not materially affect full page typing, and may be left on the roll until it is worn out, then it may be soaked off and replaced.

COCOA BUTTER SUBSTITUTE

A total substitute for Oleum Theobromatis may be obtained by mixing fats and oils, according to the Journal Suisse de Pharmacie, 79: 385. The resulting base resembles cocoa butter both in appearance and in physical characteristics. It may be used in making suppositories and ointments and is especially useful for the

treatment of patients allergic to Oleum Theobromatis. The suggested formula is as follows:

	Gm or cc.
White wax	2.5
Hard paraffin	5.0
Wool fat	5.0
Spermaceti	35.0
Liquid Petrolatum	52.5
	100.0

PENICILLIN LOZENGE

A hard penicillin tablet prepared so that it will dissolve over a period of an hour and a half when placed in the buccal fold is manufactured at the University of California Hospital Pharmacy under the direction of James P. Jones, Chief Pharmacist. The tablet is used as a lozenge in the experimental treatment of Vincent's infection. The tablet granulation contains the following ingredients:

Sucrose (powder)	320 Gm.
Acacia (powder)	960 Gm.
Calcium Stearate (powder)	240 Gm.
Potato starch	80 Gm.

It is granulated with water, dried, and lubricated with 1% calcium stearate powder. Penicillin in the desired concentration can then be added in the form of dry powder using a small amount of granulation to make a trituration which is added to the dry granulation and tableted. At a future date Mr. Jones will have additional data to report concerning the most effective concentration of penicillin in this base.

TO REPAIR GRADUATES

Graduates with broken bases may be repaired by placing the broken base in a short skirt bottle cap of suitable size and cementing the intact portion of the graduate with plaster or paris, plastic wood, or other suitable material, according to Pharmacist George Phillips. A flat-faced cap should, of course, be selected.

SUSPENSION SULFADIAZINE

A palatable mixture of sulfadiazine for administration to children may be prepared by suspending sulfadiazine powder in a syrup of cocoa base with the aid of sodium alginate. This preparation is useful especially to pediatricians.

	Gm or cc.
Sodium alginate*	3.0
Sulfadiazine Powder	62.5
USP	
Butoben** 10% in	5.0
alcohol	
Distilled Water	150.0
Syrup Cocoa N.F. to make	500.0

Add the sodium alginate to the water, allow the gum to swell. Triturate the sulfadiazine powder with a small amount of the mucilage; when a smooth paste is obtained, gradually add the remainder of the sodium alginate-water mixture. Add the Butoben solution and enough Syrup Cocoa to make the required volume. Each 4 cc of the finished product contains 0.5 Gm of sulfadiazine. Dispense with shake label.

* Sodium Alginate is distributed by The Kelco Company, 75 East Wacker Drive, Chicago, Illinois.

**Butoben is the butyl ester of p-hydroxybenzoic acid, marketed by Merck & Co., Inc.; it is used as a preservative.

Note: A formula quantity of sodium alginate will be sent free to any member who requests it. Send a postal card to the Editor.

ELIXIR PENTOBARBITAL

A formula for an elixir of pentobarbital has been proposed by the National Formulary Committee. This is one of the most pleasant tasting pentobarbital elixirs that has come to our attention. The formula as presented in the Bulletin of the National Formulary Committee, March-April, 1945, is as follows:

	Gm or cc.
Pentobarbital Sodium	4.0
Tincture of Sweet Orange	30.0
Peel	
Alcohol	125.0
Glycerin	450.0
Syrup	150.0
Diluted Hydrochloric Acid	6.0
Caramel	2.0
Distilled Water qs ad	1000.0

Dissolve the pentobarbital sodium in 200 cc of distilled water, then add the glycerin, alcohol, tincture of sweet orange peel, caramel and syrup. Mix thoroughly and add the diluted hydrochloric acid and sufficient water to make the product measure 1000 cc. Mix well and filter, if necessary, to obtain clear elixir.

SYRUP AMINO ACIDS

Amino acid mixtures may be administered either orally or parenterally to supply dietary protein to patients with food allergy or ulcerative colitis. One hundred grams of one amino acid mixture, Amigen, supplies 75 Gms. of protein, an adequate amount to maintain nitrogen balance in a 70 Kilo man.

It is often very difficult to persuade patients to take the required amount of the amino acid mixture because of its extremely disagreeable taste, aptly described as a "burnt blanket taste".

It has been found that Syrup Acacia with a small amount of Peppermint Oil is an excellent vehicle for masking the unpleasant taste of amino acid mixtures. Butoben is used as a preservative. The following formula quantity is usually administered as 4 tablespoonfuls (60cc) six times a day.

	Gm or cc.
Amino acid mixture*	100.0
Distilled water	30.0
Butoben, 10% alcoholic	3.6
solution	
Oil Peppermint	0.2
Syrup Acacia N.F., qs ad	360.0

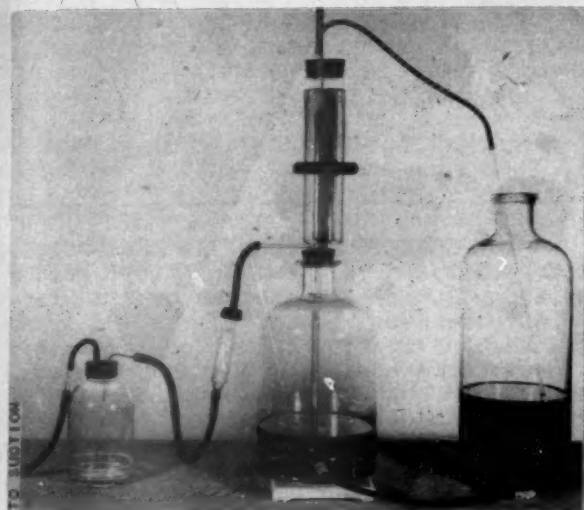
Make a smooth, uniform suspension.

* Amigen, Mead Johnson Company.

SULFAGEL

	Gm or cc.
Sodium Sulfite	0.2
Sodium Sulfa drug	5.0
Propylene glycol	15.0
Ethyl parasept	0.1
Methyl Cellulose	4.0
Aqua qs ad	100.0

A water-soluble jelly containing a sodium sulfa drug may be readily prepared with the aid of methyl cellulose. Methyl Cellulose may be obtained from the Dow Chemical Company, Midland, Michigan.

AUTOMATIC SELF-FILLING FILTER

May we suggest this automatic self-filling device for those who tire of constantly refilling bacterial filters with small portions of solution to be filtered. By the simple expedient of placing a large one-hole rubber stopper in the top of a Berkefeld filter mantle, a negative pressure is created inside the mantle during the filtration process. The one-hole stopper communicates with the solution to be filtered by means of two pieces of glass tubing and one piece of rubber tubing, as shown in the illustration. Once the mantle is filled and the stopper is in place, filtration will continue as long as suction is applied and as long as there is solution in the preparation bottle to be filtered. The stock solution will be constantly drawn up into the mantle to replace the fluid which passes through the candle into the aspirating bottle. This device works equally as well with SEITZ filters.

PENICILLIN OINTMENT

Penicillin ointments are now widely used. A modified Mumford's formula makes an ideal base for such ointments. This base possesses many advantages: it is readily miscible with serum exudates and brings the penicillin into intimate contact with the infection; penicillin sodium is soluble in this base, in contrast to its insolubility in bases made up of petrolatum, lanolin and cholesterol esters; and oil in water emulsions containing a surface tension lowering agent (sodium lauryl sulfate) are thought by many to assure a better spread and penetration of the ointment and its medicament. In addition, since the pH of this ointment is approximately 6.4, it is ideal in this respect for penicillin ointments. Further, the base contains propylene glycol which is

recognized as a preservative far superior to glycerin.

Also, the following formula may be sterilized by autoclaving at 121°C (15 lbs. pressure) in an ointment jar 3/4 full and tightly sealed. Experience has shown that there is no loss of moisture and more remarkable is the fact that the emulsion does not break. A smooth, creamy base results, if, after autoclaving, the contents of the sterilized jar are shaken until the ointment cools to about 40°C. This jar of sterile ointment may then be used as a stock container and penicillin ointments may be prepared extemporaneously with aseptic technic, if indicated, for filling prescriptions. The penicillin is added aseptically from a sterile solution in the original vial, thus any desired number of units per gram may be readily added to the ointment.

In contrast to the ease with which this base may be sterilized, bases containing a mixture of petrolatum with amines or cholesterol esters are not readily sterilized by autoclaving since spore-forming organisms in an anhydrous medium are not killed by temperatures up to 120°C. even if exposed for 40 minutes. The modified Mumford formula contains 40% water, thus adequate moisture is present to effect sterilization when combined with the proper amount of heat.

The suggested formula is as follows:

Cetyl Alcohol	6.4
Stearyl Alcohol	6.4
Sodium Lauryl Sulfate	1.5
White Petrolatum	14.3
Liquid Petrolatum	21.4
Propylene Glycol	10.0
Water	40.0
	100.0

Dissolve the sodium lauryl sulfate in the water heated to 60-70°C. on a water bath. Melt the other ingredients at 60-70°C. and add to the aqueous phase with mechanical stirring. Heat and stir for ten minutes, remove from the bath and stir until cool.

CAPSULES PENICILLIN

Sodium Citrate USP	0.5 Gm.
Penicillin sodium	5000.0 Units
(Formula for one capsule)	

Powder the sodium citrate. Weigh enough of the powdered sodium citrate to make the required number of capsules. Add the proper amount of penicillin (a vial of 100,000 units makes 20 capsules), mix thoroughly. Fill the empty #1 capsules with the required amount.



ORGANIZATION NEWS

THE MASSACHUSETTS SOCIETY OF HOSPITAL PHARMACISTS will hold its next meeting in Worcester Memorial Hospital on May 16 at 3 P.M. Election of officers will take place at that time. All hospital pharmacists in the state are urged to attend this important meeting. The speaker at the evening session will be the Commissioner of Pharmacy, Timothy S. Shea of Worcester. Arrangements of the meeting are in charge of Joseph A. Barry of the Worcester Memorial Hospital.

The Massachusetts Society believes there is a real need for an association of hospital pharmacists in that state which will:

1. Arrange for its members to meet monthly in the various hospitals represented.
2. Promote closer co-operation and good will between administrators, physicians and hospital pharmacists by:
 - a. Having the hospital administrator welcome the visiting group,
 - b. The holding of a special program yearly to which all administrators and physicians are invited.
3. Serve as an inspiration for the advancement of Hospital Pharmacy.
4. Work in close union with the American Society of Hospital Pharmacists and the American Pharmaceutical Association.
5. In general, to operate as a dignified professional group, similar to local medical associations, meeting monthly, and presenting the latest in pharmacy and medicine through speakers, motion pictures and own-member participation.
6. Exclude all commercial interests, as such, by members and non-members.

THE HOSPITAL PHARMACISTS OF SOUTHERN CALIFORNIA held a dinner meeting March 8, at Eaton's Admore. Following the dinner, Dr. C.H. Thienes, Professor of Pharmacology at the University of Southern California gave a most interesting and out of the ordinary talk on the "Origin and Value of Ethics". Dean Hall of the University of Southern California College of Pharmacy spoke on numerous items of interest to the hospital pharmacists of Southern California. Laura H. Taylor of St. Vincent's Hospital, 2131 West 3rd St, Los Angeles 6, is now Secretary of the organization.

THE SOCIETY OF HOSPITAL PHARMACISTS, Metropolitan area, New York City, held a meeting, March 1st, at the Hospital for Joint Diseases. Don A. Clarke, Chairman of the Constitution Committee, presented mimeographed copies of the proposed constitution to the attending members. The constitution will be read and discussed at three meetings prior to its final adoption. Leo F. Godley, Chairman of the Program Committee, introduced Dr. N.P. Watts, Research Associate in the Department of Therapeutics, New York University. Dr. Watts presented a most informative talk on the pharmacology of thyroid medications.

THE HOSPITAL PHARMACISTS OF CHICAGO-LAND held a round table discussion on The Hospital Detailman at its March 20 meeting. Detail men who call on hospital pharmacists were invited to attend the meeting and to take part in the discussion. This was the beginning of a series of meetings to develop better co-operation among the various fields of Pharmacy. The speaker of the evening was C.F. Buck of the Trade Relations and Advertising Department of Eli Lilly and Company. Mr. Buck spoke on Professional Promotions For The Retail Pharmacist. At the April 17 meeting of the group, Dr. Carroll Birch, Associate Professor of Medicine at the University of Illinois, spoke on Tropical Medicine.

THE ASSOCIATION OF HOSPITAL PHARMACISTS OF THE MID-WEST is now officially affiliated with the American Society of Hospital Pharmacists. A refund check for \$1 per member has been issued by the Society's Treasurer Sister Mary John to Miss Phyllis Platz who is Secretary of the Association. At the April 14 meeting of the Association of Hospital Pharmacists of the Mid-West, in Omaha, at Immanuel Hospital; in Lincoln, at St. Elizabeth's Hospital, final plans for the general meeting in May were formulated. The Association is currently carrying out an expansion program. Letters stating the aims and purposes of the Association have been sent to over 50 hospital pharmacists in the area covered by the organization. This Association is comprised of hospital pharmacists living within a radius of 250 miles of Omaha.

THE MARYLAND ASSOCIATION OF HOSPITAL PHARMACISTS comprises approximately 75% of the hospital pharmacists in the state. This body was organized in the early part of 1944. The Association has several times given consideration to joining the American Society of Hospital Pharmacists, but as yet the suggestion has not been fully approved. The majority in the Association believe that it should be affiliated with the American Hospital Association, rather than, or as well as the American Pharmaceutical Association. The officers for the past year have been: President G.A. Mouat of Maryland General Hospital, Vice-President A. Mentis of Union Memorial Hospital and Secretary-Treasurer Miss H. Noel of the Church Home Infirmary, all of Baltimore. The Advisory Committee consists of R.S. Fuqua of Johns Hopkins Hospital, Miss Herskowitz of Baltimore City Hospital, and R. Alperstein of Sinai Hospital. An election for new officers was held in April of this year.

THE CLEVELAND SOCIETY OF HOSPITAL PHARMACISTS held its April meeting at the Cleveland Hospital Council. A roundtable discussion was held on The Relation of the Hospital Council to the Hospital Pharmacy.

THE LOUISIANA SOCIETY OF HOSPITAL PHARMACISTS will have Miss Gladys Herbert, pharmacist at Charity Hospital, as the speaker at its April meeting. Miss Herbert will speak on the Control of Narcotics.

THE AMERICAN ASSOCIATION OF GOVERNMENT PHARMACISTS is a newly organized unit comprised of pharmacists in Government service. The following list of officers and committees have been selected to serve until a general election is held in May, 1946.

OFFICERS

H.C. Painter, Pres.
Veterans Administration
Washington, 7, D.C.

J.D. Jones, Vice-Pres.
Veterans Hospital
San Fernando, Calif.

Albert H. Moore, Sec.
Veterans Hosp.
Alexandria, Louisiana

COMMITTEES

Membership

Alfred D. Schiff
Veterans Hospital
Whipple, Arizona

Margaret S. Gary
U.S. Marine Hosp.
Norfolk, Virginia

Organization

Capt. Thomas F. Criswell
Fitzsimmons Gen.
Hospital
Denver, 8, Colo.

Robert H. Woods,
Veterans Hospital
Cheyenne, Wyo.

The general aims and purpose of the new organization is to promote the interests of Government Pharmacists that they may become more useful to the departments they serve and to the allied public health professions. The Association plans to actively support any necessary legislation that may benefit pharmacists and the practice of pharmacy in institutions. It opposes any attempt by any group to lower the standards of Pharmacy. The American Association of Government Pharmacists encourages its members to affiliate with National, State and Local pharmaceutical organizations and pledges itself to cooperate with the American Pharmaceutical Association and the American Society of Hospital Pharmacists for the Advancement of Pharmacy. For Government Pharmacists, it seeks recognition of their value to the institution, and remuneration on a parity with that paid to pharmacists in civilian positions. Further information may be obtained by addressing Secretary Albert H. Moore, Veterans Hospital, Alexandria, Louisiana, or by sending him the printed application blank.

THE HOSPITAL PHARMACISTS ASSOCIATION OF PHILADELPHIA will meet May 15th to elect officers for the coming year. On June 5th the Annual Dinner will be held. Later in June the Association will hold a picnic sponsored by Mr. Rosenberg of Smith, Kline and French. At the April 17th meeting Dr. Feiler of Sharp and Dohme spoke on the "Relationship of Sulfonamides to Ambiotics and Antiseptics."

APPLICATION FOR MEMBERSHIP
AMERICAN ASSOCIATION OF GOVERNMENT PHARMACISTS

APPROVING OF ITS OBJECTS, I HEREBY APPLY FOR MEMBERSHIP IN THE AMERICAN ASSOCIATION OF GOVERNMENT PHARMACISTS AND ENCLOSE ADDRESSED STAMPED ENVELOPE FOR 1945-1946 CARD.

NAME IN FULL _____ DATE _____
NUMBER AND STREET _____ TOWN _____
STATE _____ GRADUATE OF _____
YEAR _____ DEGREE _____ REG. IN STATE OF _____
LICENSE NUMBER _____ DATE ISSUED _____ BRANCH OF
FEDERAL SERVICE AND ADDRESS _____

REMARKS: _____

ALBERT H. MOORE, SECRETARY
VETERANS ADMINISTRATION
ALEXANDRIA, LOUISIANA

N.B. WOULD YOU SERVE ON A COMMITTEE IF NEEDED?
DUES FREE 1945-1946

THE KWEIYANG CENTRAL HOSPITAL PHARMACY, KWEICHOW, CHINA

By John Kuo-chieh Liu, Chief Pharmacist

Kweiyang is the crossroads of two unsurfaced highways over which all the trucks carrying both military and civilian supplies in southwest China pass. It lies about five hundred kilometers south of Chungking. Since the outbreak of the Sino-Japanese War in 1937, thousands of homeless civilians have migrated to this city, the most important center in the Southwest. The great increase in population and the scarcity of medical supplies have made Kweiyang's Central Hospital, which is located one and one-half kilometers south of Kweiyang, one of the largest national civilian hospitals in China.

This hospital with all of its 250 beds constantly filled has proved invaluable to the people living in and around Kweiyang. Sometimes a number of beds are spared for wounded soldiers who may be either Chinese or American. Last January we opened another special ward for U.S. soldiers; and, when I left Kweiyang last December, there were about ten U.S. servicemen in this ward. The hospital is a general as well as a teaching hospital for the National Hunan Yale Medical College; unfortunately, its size is limited by the lack of nurses and the shortage of medical supplies. It maintains both an in-patient and an out-patient clinic which are handled under much the same routine as those in America.

The hospital pharmacy occupies five rooms approximately 6 x 25 meters in area. These rooms are assigned to dispensing, manufacturing, sterile solution preparations, the staff office, and storage.

In the dispensary both the out- and in-patients' prescriptions are prepared in an average number of 120 to 170 every day. We have to work on Saturday afternoons and Sunday mornings; however, we have five legal holidays each year.

One larger room is designated for manufacturing. Most of the equipment came from Nanking in 1937 on the Yangtze. Some of it came from Hongkong. In the past two years, owing to the difficulty encountered in obtaining the material, we manufactured chiefly those medicaments the patients most needed. The tablets manufactured are aspirin, aspirin compound, phenobarbital, bismuth subcarbonate, Glycyrrhiza compound, sodium borate compound, etc. We manufacture five or ten thousand of each tablet every two weeks. The liquid preparations manufactured are classified as tinctures, fluidextracts, and spirits. The fifteen kinds of tinctures commonly prepared are Nux Vomica, Belladonna, Rhei compound, Gentian compound, Benzoin compound, Zingiber compound, Capsicum, etc. The fluidextracts are Glycyrrhiza, Ephedra, Rhei, Belladonna, etc. The spirits we made were Spiritus Aethylis Nitritus, Spiritus Ammoniae Aromaticus, and most of the other spirits stated in the Chinese Pharmacopoeia. Some other liquid preparations, e.g., Mixtures, Emulsions, Elixirs, Liquors, Waters, are also available in the pharmacy.

Among the official ointments listed in the Chinese Pharmacopoeia, about ten kinds are used commonly in the hospital. The most common ones are ammoniated mercury, salicylic acid, sulfur, zinc oxide, and boric acid. All of these are prepared in the pharmacy in 2000 gram quantities in mortars, because the ointment machine has been damaged. Every other day, we usually prepare ten pounds each of salicylic acid and sulfur ointments and five pounds of boric acid ointment. The crude native material we use consists of both inorganic salts and plant drugs. Of the former, the crude magnesium sulfate, ferrous sulfate, talcum, kaolin, calcium sulfate, etc., are easily obtained from the market. These crude salts are purified and standardized with the official process before they are dispensed. The plant drugs include Rhubarb, Licorice Root, Cinnamon, Gentian, Ephedra, etc. A number of these plant drugs are used in the hospital after manufacturing and standardization.

The third room is allotted to sterile solutions. The large quantity sterile solutions, e.g., dextrose, saline, etc., have to be prepared thrice a week. The other common ampules are Procaine Hydrochloride, Quinine DiHydrochloride, Emetine Hydrochloride, Caffeine and Sodium Benzoate, Phenol-sulfonphthalein, Ephedrine Sulfate, Calcium Chloride, Strychnine Sulfate, Adrenalin Hydrochloride, Antimony and Potassium Tartrate, etc. About fifteen kinds of sterile

CONCLUDED ON PAGE 58-



JOHN KUO-CHIEH LIU

劉國傑

辛酉年四月。

貴陽中央醫院藥房



CURRENT ABSTRACTS

Bactericidal Efficiency of Iodine Solutions and Organic Mercurial Antiseptics, by Gershenfeld, L. and Patterson, G.W., Jr., *Am.J. Pharm.*, 117:5-11, Jan., '45.

Bactericidal tests comparing USP preparations of iodine with five proprietary organic mercurial antiseptics revealed the fact that the iodine solutions were more effective. None of the mercurials was effective within five minutes against *Eberthella typhosa* in a dilution greater than 1:5 and none of the dilutions greater than 1:3 was effective against *Staph. aureus*. The 2% aqueous solution of iodine was effective in five minutes in dilutions of 1:300 and 1:500.

The Neutralization of Gastric Acidity with Basic Aluminum Aminoacetate by Krantz, Jr., Kibler, and Bell, *J. Pharmacol. & Exper. Therap.*, 82:3, Nov., '44, 247.

Basic aluminum aminoacetate is the basic aluminum salt formed by the reaction of aluminum isopropoxide with glycine. (Aluminum isopropoxide may be formed by refluxing aluminum wire or turnings with absolute isopropyl alcohol in the presence of a suitable catalyst). This compound mixes readily with water to form suspensions of p-H 7.4 with an aluminum content of 18.3%. It gives the dual effect of immediate acid neutralization by the amino group and secondary prolonged buffering of acid by the metathesis of this aluminum salt of the amino acid and the strongly dissociated hydrochloric acid of the stomach. The aluminum chloride formed exhibits astringency. The action of this salt is devoid of the customary "lag" in acid neutralization apparent in aluminum hydroxide therapy.

Chlorophyll Derivatives with Antibacterial Agents in Wound Healing, by Smith and Livingston, *Am. J. Surgery*, p 30, 67: Jan., '45. Topical treatment of surgical lesions in guinea pigs with an ointment combining chlorophyll (1%) and penicillin (250 Oxford units per gram) gave spectacular results in healing. Carboxysulfathiazole in combination with the chlorophyll ointment nearly equalled the penicillin-chlorophyll ointment in effect. Sulfanilamide, Sulfamerazine, and Succinyl-sulfathiazole alone actually caused a delay in healing in comparison with the other

ointments. Tetrodine (6% iodine) was about as effective as the three sulfas. A dusting powder of each of the different combinations was not so promising in its action as the ointment.

Dibutoline Sulfate, A New Mydriatic and Cycloplegic Drug, by Swan and White, *Arch. Ophthal.*, 33:1, 16, Jan., '45. Dibutoline is a surface-active mydriatic which is readily soluble in water and stable at room temperature for weeks. The five per cent solution in distilled water is nearly neutral (p-H 6.5) and almost isotonic. In duration its effects are comparable to those of homatropine, but its cycloplegic effect is more pronounced. Rapid action, a short period of visual disability, and negligible systemic effects are its more favorable characteristics. It also has an antiseptic action. Repeated dosage produces irritation of the conjunctiva.

Administration of Penicillin by Mouth by Gyorgy, Vandegrift, Elias, Collo, Barry, and Pilcher, *JAMA*, March 17, '45, 127:11, 639. Penicillin given by mouth in combination with a buffer salt such as trisodium citrate can exert a beneficial therapeutic effect comparable in speed to parenteral administration and can also produce prolonged penicillin blood levels. The penicillin can be administered in the form of a special tablet or in a freshly prepared aqueous solution with one to five gram doses of sodium citrate.

Propionate and Undecylenate Ointments in the Treatment of Tinea pedis and In Vitro Comparison of their Fungistatic and Antibacterial Effects with Other Ointments. Keeney, Ajello, Broyles, and Lankford, *Bull. Johns Hopkins Hosp.*, 75:417-439, Dec., '44. Propionate-propionic acid ointment is equalled only by 10% undecylenate-undecylenic acid ointment in its inhibitory effect on *Trichophyton mentagrophytes* #640 *in vitro*. It was superior to Whitfield's Ointment, 10% ammoniated mercury ointment, 5% sulfathiazole and 0.5% tyrothricin ointments. (The sodium propionate may be obtained from E.I. Du Pont Company under the trade name "Mycoban") These absorption base ointments were fungicidal, antibacterial, and non-irritant. **F.B.**



FRONT COUNTER

THE CLEVELAND CLINIC PHARMACY

By Thomas J. Lolli, Chief Pharmacist

The Pharmacy Department of the Cleveland Clinic, Cleveland, Ohio, was established in July, 1924. For several years it was operated by one pharmacist. Owing to the increase in amount of work, additions to the Pharmacy Staff have gradually been made, until now there is a total personnel of eleven, five of whom are pharmacists.

The Pharmacy occupies about 600 square feet on the first floor and about 2000 square feet in the basement. The basement section consists of a manufacturing division, a sterile solution room, a fire-proof vault for the storage of alcohol and inflammable chemicals, and a storage room for bulk stock.

The Pharmacy hours are from 8:00 A.M. to 6:30 P.M. Monday through Friday and 8:00 A.M. to 2:00 P.M. on Saturday.

The Pharmacy supplies the drug needs of the Clinic, the Hospital, and the Research Department of the Cleveland Clinic. The Hospital is an eight story building having a capacity of 250 beds.

The Pharmacy has four functions.

1. Preparation of Sterile Solutions. Intravenous sterile solutions and infusions are manufactured in the Solution Room. The Solution Room occupies a space of about 400 square feet and contains a large sterilizer (30" x 54"), two water stills, a

water tester, filtering apparatus, a work bench, and storage cabinets.

The following solutions are prepared in flasks for hospital use:

(A) Fenwal Flasks

1. 5% glucose in normal saline (1000cc)
2. 5% glucose in distilled water (1000cc)
3. 10% glucose in normal saline (1000cc)
4. 10% glucose in distilled water (1000cc)
5. 25% glucose in normal saline (500cc)
6. 25% glucose in distilled water (500cc)
7. 3% saline solution (500cc)
8. 1% saline solution (500cc)
9. 3% glucose in normal saline
+ 1/40% procaine hydrochloride (1800cc)
10. 4% sodium citrate solution (50cc)

(B) Florence Flasks

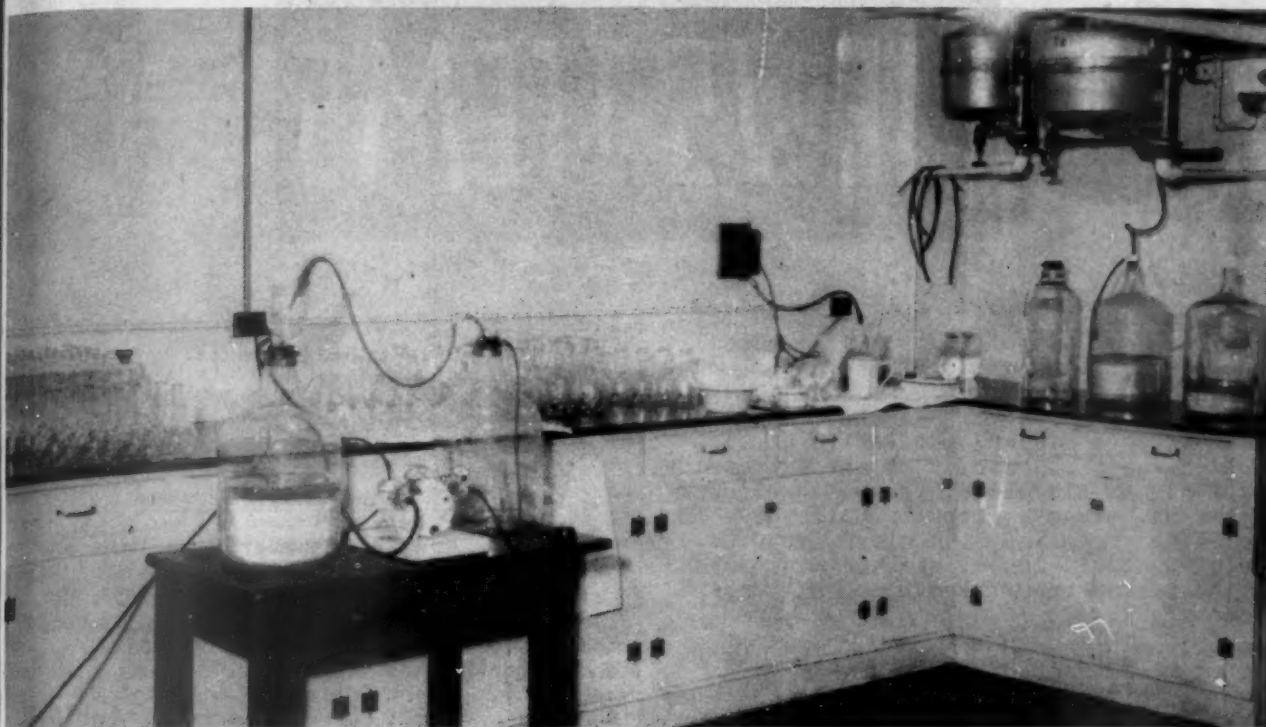
1. 1% saline solution (500cc)

(C) Erlenmeyer Flasks

1. 1% saline solution (100cc)
2. distilled water (100cc)

During 1944 an average of 500 flasks were prepared weekly. It requires the full time of one pharmacist to prepare the solutions.

2. Manufacturing Various special formulas and some U.S.P. and N.F. formulas such as Elixir Terpin Hydrate with Codeine, Elixir Phenobarbital, Elixir Triple Bromides are manufactured by a pharmacist and an assistant. The Hospital drug baskets are filled



SOLUTION ROOM

every morning in this section.

3. Compounding of Prescriptions An average of 250 prescriptions are filled daily for Clinic patients. The work requires the full time of two pharmacists, two counter clerks and one typist. A reference file for the convenience of the physicians is also maintained in the Pharmacy.

4. Mail Orders and Special Hospital Requisitions About 35 letters are received every day, requesting refills of prescriptions. After consultation with the attending physician these mail orders are filled and mailed out daily.

Special requisitions for medicaments for hospital patients are also filled in this section. An average of 40 requisitions are handled daily.

The above work is accomplished by a pharmacist, a stenographer and a pharmacy clerk.

A purchase list of drugs to be ordered for the Pharmacy is prepared twice weekly and referred to the Purchasing Department of the Clinic. Incoming merchandise is delivered to the storeroom where it is checked for accuracy by the receiving clerk and then delivered to the Pharmacy. All invoices are checked and paid by the Executive Department.

A perpetual inventory of narcotics and alcohol is maintained.

Plans are now being made to relocate the Pharmacy Department in order to allow more working space and to provide a large waiting room for patients.

APPLICATION FOR MEMBERSHIP AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

Approving of its objects, I hereby apply for membership in the American Society of Hospital Pharmacists and enclose \$3.00 as the annual membership fee for the current year. As proof of membership in the American Pharmaceutical Association I also enclose an application for membership therein together with \$5.00. It is understood I shall receive all the benefits described in such application. In lieu of enclosure of membership fee in American Pharmaceutical Association, I submit statement of affirmation of membership therein together with application for membership in American Society of Hospital Pharmacists.

Name in Full _____
No. and Street _____ Town _____ State _____
Graduate of _____ Year _____ Degree _____
Registered as _____ Year _____ License No. _____
Where Employed _____ Address _____
Capacity in Which Employed _____ No. of Years _____
Member of What Local Groups (Hospital) _____

I. THOMAS REAMER, Secretary
Duke University Pharmacy, Durham, N. C.

Hospital Pharmacists wishing to affiliate with their professional Society may send the accompanying application blank to Secretary I. T. Reamer at Duke University Hospital, Durham, North Carolina. If you are not already a member of the American Pharmaceutical Association, you may send Mr. Reamer the Association fee of \$5 along with the American Society of Hospital Pharmacists fee of \$3. Should you prefer you may send the requested information on a separate paper.



NEWS ITEMS



Pharmacist John F. Miller, formerly with The Corozal Infirmary, Panama Canal Zone, has finished his contract and has now returned to Ohio.

Clarence Miller, who before his induction was a pharmacist at the University Hospitals in Cleveland, is now a prisoner of war in Germany. Private Miller was in the Glider Detachment, Medical Airborne Division and it is believed he was caught in the German breakthrough in Belgium in December, 1944.

Albert P. Lauve, Chief Pharmacist at Charity Hospital of Louisiana, is secretary of the Louisiana State Pharmaceutical Association. Mr. Lauve has also been appointed a member of the Prescription Information Board of the Journal of the American Pharmacy Association, Practical Edition.

Alfred Trahan of the Charity Hospital of New Orleans, Louisiana, has been appointed to the Membership Committee to replace Miss Barr who recently accepted a position with the Maltbie Chemical Company.

The Duke University Hospital Formulary, published at Durham, N.C., is now available in the 1945 edition. It is a 73 page book containing a therapeutic classification of drugs. The Table of Contents lists: Introduction, Drugs acting on the Skin, Alimentary Tract, Circulation, Genito-urinary System, Respiratory System, Central Nervous System, Blood, Drugs used in Specific Diseases, Drugs used for Eye and Ear, Miscellaneous, Appendix, and Index. The English System of titles is used throughout. The Formulary is published in a convenient pocket size of 4 $\frac{1}{2}$ x 6 $\frac{1}{2}$ inches. It was compiled by Chief Pharmacist Reamer.

Sister Mary John, Chief Pharmacist at Mercy Hospital, Toledo, Ohio, is chairman of the Program Committee of the Toledo Branch of the American Pharmaceutical Association.

Miss Dorothy Tobin, Chief Pharmacist at the W. A. Foote Memorial Hospital in Jackson, Michigan, has been honored by having her article reprinted in the Public

lic Pharmacist, the official journal of the Guild of Public Pharmacists of the United Kingdom. Miss Tobin's article discussed "Creating A Modern, Small Hospital Pharmacy", and was originally printed in the May issue of Hospital Management.

1945 Membership Fees Due

There are still several members who have not yet sent their 1945 dues to Secretary Reamer. It will be much easier to keep the records up-to-date if all unpaid members will send in their dues this month. Won't you please co-operate by sending your membership fee to Thomas Reamer, Duke University Hospital, Durham, North Carolina.

Hazel E. Landeen Resigns

The resignation of Hazel Landeen, former vice-chairman of the American Society of Hospital Pharmacists, has been received. For many years Miss Landeen has contributed much in time, energy and ability to promote the growth and development of the Society. Miss Landeen's letter of resignation is printed below in full.

"I resigned my position as relief pharmacist at Mounds Park Hospital, Saint Paul, the first of the year, to accept other work which is more congenial, better pay and fits in more nicely with my graduate program here at the university. For this reason I am tendering my resignation as Vice-Chairman of the American Society of Hospital Pharmacists and request also that my name be removed from the A.S.H.P. membership list."

Veterans' Training

The North Carolina Board of Pharmacy is now formulating plans to aid registered pharmacists being discharged from the armed services. In response to a questionnaire sent by the North Carolina Board of Pharmacy, a large number of service men have requested that some provision be made to provide training in Hospital Pharmacy.

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GLENN SONNEDECKER

Glenn Sonnedecker is the editor of the Practical Edition of the Journal of the American Pharmaceutical Association. Prior to his appointment in October, 1943, he served on the editorial staff of Science Service, Washington, D.C. His articles on Pharmacy and allied sciences have been widely syndicated by newspapers, magazines and the radio.

He is registered with the Ohio Board of Pharmacy. Mr. Sonnedecker was graduated from the College of Pharmacy of Ohio State University. There he took special studies in journalism. He has had practical experience in retail pharmacy. His affiliations are the A.Ph.A., Phi Delta Chi, Phi Rho Alpha, Sigma Delta Chi, and the American Association of Scientific Workers.

Recently, Editor Sonnedecker initiated a section devoted to Hospital Pharmacy in The Journal. An excellent symposium on Penicillin has been compiled by Mr. Sonnedecker for the April number of The Journal. These discussions include Properties and Standardizations, Biologic Characteristics, Present Day Production Methods, Production and Distribution, Considerations in Therapy, Pharmacy and Formulation, Publications, and Oil Suspensions for Oral Use. There is also a discussion by Dr. Robert P. Fischelis, Secretary of the American Pharmaceutical Association, on the opportunities and obligations of pharmacists in the handling of Penicillin. A comprehensive index is included. All pharmacists should keep this splendid issue of The Journal close at hand as a complete source of Penicillin information.

Miss Gracie Barr, former Chief Pharmacist at Touro Infirmary, New Orleans,

resigned her position effective, April First. She is now with Maltbie Chemical Company.

Mrs. Ethel Wagner Sams has been appointed chief pharmacist at Touro Infirmary, New Orleans, by Superintendent Jarr-ett.

Miss Pauline Greenberg, a graduate of Loyola University College of Pharmacy, is now employed as pharmacist at Touro Infirmary in New Orleans.

Mrs. John McDonald (Née Miss Yvonne Jacobs) formerly employed with the Tulane Research Unit, has accepted a position as pharmacist at Charity Hospital, New Orleans.

Miss Billye Rivet is now engaged in Hospital Pharmacy at Hotel Dieu, New Orleans.

Thaddeus S. Grosicki is now Leo Godley's assistant at New York University Clinic. Mr. Grosicki graduated from the College of Pharmacy of the University of Michigan in 1945. He is now taking graduate work at New York University.

INTERNSHIP AVAILABLE

A Hospital Pharmacy rotating internship is available at the Duke University Hospital, Durham, North Carolina. It includes work in the preparation of parenteral fluids, bulk manufacture, outpatient clinic and hospital dispensing. The pharmacy intern may attend a one-hour medical or surgical round or lecture weekly. The work schedule is 45 hours per week. Remuneration is \$900.00 per year plus room, board and laundry. Send a small photograph and a statement indicating your aims and ambitions in Hospital Pharmacy to Chief Pharmacist, I. Thomas Reamer.

Dr. Edward J. Ireland, Faculty Member of Loyola University of the South, will address the Louisiana State Dental Society at Loyola University, April 18th, on the subject of Dental Therapeutics.

Mr. Joe Witt, pharmacist at Garfield Hospital, Chicago, has resigned his position to open a store in the city.

President Paul Cole of the Hospital Pharmacists of Chicagoland has appointed a Committee on Minimum Standards. This committee will report on minimum standards for Pharmacy in hospitals and will also consider the question of standards for those hospitals offering pharmacy internships.

POSITIONS IN

HOSPITAL PHARMACY

Miss Virginia Driscoll of 502 North 32nd Street, Omaha 2, Nebraska, is interested in a position in Hospital Pharmacy. Miss Driscoll will graduate from the Creighton University College of Pharmacy in June of this year. She is especially interested in working in an institution which offers a Pharmacy internship course.

Miss Dana Le Valley, who will graduate from the Montana University College of Pharmacy in June is interested in a position in Hospital Pharmacy. Miss Le Valley may be addressed at New Hall, Missoula, Montana.

Miss Nelly A. Nigro of 1419 South 4th, Omaha, Nebraska, is interested in a position in Hospital Pharmacy. Miss Nigro will graduate from the Creighton University College of Pharmacy in June of this year. Miss Nigro would like to obtain a position in an institution which offers a pharmacy internship course.

Miss Alice M. Appel of 1609 34 Street, Omaha, Nebraska, is interested in a position in Hospital Pharmacy. Miss Appel will graduate from the Creighton University College of Pharmacy in June of this year. She is especially interested in working in an institution which offers a pharmacy internship course.

Henry Teshima, 511 North 16 Street, Lincoln, Nebraska, will graduate from the University of Nebraska College of Pharmacy in May of this year. Mr. Teshima is an American citizen of Japanese ancestry. He is 24 years old and is a member of Rho Chi. Mr. Teshima is interested in a position in Hospital Pharmacy and would particularly like to work in a hospital which offers a pharmacy intern program.

Patti Cain will graduate from the Indianapolis College of Pharmacy in September, 1945. Miss Cain is interested in a position in a hospital pharmacy, especially one offering a hospital pharmacy training course. Miss Cain lives at 630 Congress Avenue, Indianapolis 8, Indiana.

HOSPITAL PHARMACISTS who would like to obtain student help in their department for the Summer are requested to write to Associate Editor Gloria F. Niemeyer, 1313 Ann Street, Ann Arbor, Michigan. Miss Niemeyer will try to place them in contact with pharmacy students who would like to obtain experience in Hospital Pharmacy.

Saint Luke's Hospital Pharmacy, 11311 Shaker Boulevard, Cleveland 4, has a position open on its pharmacy staff. The hours of work are from 8.00 A.M. to 5:00 P.M. with a half day Saturday, and Sunday and Holidays off duty. The call work is done largely by the intern pharmacists and it is not customary for the staff pharmacists to take frequent calls. The beginning salary for staff pharmacists is \$175 per month. For additional information write to Evelyn Gray Scott, Chief Pharmacist.

The St. Joseph's Hospital of Warren, Ohio, would like to employ a hospital pharmacist. St. Joseph's is a 150 bed hospital and the new pharmacy is located in the new addition opened two years ago. The salary for the position is open. For further information please write to Sister M. Gilberta.

Wesley Memorial Hospital, 250 East Superior Street, Chicago 11, has an opening for a registered pharmacist on its staff. The salary paid will depend on the experience of the individual. For additional information write Chief Pharmacist Adelaide Venetucci.

Albany Medical College. Arthur Knudson, Professor of Biochemistry at Union University, Medical Department, Albany Medical College, Albany, New York, is looking for a well-trained pharmacist to manage the hospital pharmacy. The individual should also have sufficient background to teach chemistry to the student nurses. The salary is open.

PHARMACY STUDENTS who would like to obtain either Summer or permanent positions in the pharmacy of a hospital are requested to write Associate Editor Gloria F. Niemeyer, 1313 Ann Street, Ann Arbor, Michigan. Miss Niemeyer will try to place you in contact with a hospital pharmacist who needs assistance. Will the Deans of the Colleges of Pharmacy please post a general notice to this effect on their bulletin board?

Duke University Hospital offers a Hospital Pharmacy rotating internship. See page 47.

PURDUE UNIVERSITY will soon graduate several girls interested in hospital Pharmacy positions. For further information write to Dr. H.G. De Kay, Professor of Pharmacy, Lafayette, Indiana.

See page 60 for Youngstown, Ohio position.



A MURAL DEPICTING DR. WITHERING PREPARING
AN INFUSION OF DIGITALIS
FROM A MURAL BY DIEGO RIVERA AT THE NATIONAL
INSTITUTE OF CARDIOLOGY, MEXICO CITY

Dr. McKeen Cattell: During the hour we plan to continue the discussion of water balance which we began last time, with special reference to the drug treatment of edema. The discussion will be opened by Dr. Gold.

Dr. Harry Gold: Last time Dr. Barr presented an account of factors responsible for the maintenance of normal distribution of water in the body, more particularly the better-known factors, such as the gradient of hydrostatic pressure in the capillaries from the arterial to the venous side, the osmotic pressure of proteins, and the distribution of electrolytes on the two sides of the cell membrane. By way of illustration with the case of heart failure, he pointed out that several factors might participate at one time in upsetting the balance and leading to edema, or the reverse--abolishing edema.

From the discussion that followed I think it must have become pretty clear that one can ask many questions about the mechanism of edema which cannot be answered satisfactorily, and yet there are several well-known facts, chemical and physiologic, concerning the mechanism of edema which serve to provide a sound base for the measures which are used in its treatment.

I might add at this point that there are very few therapeutic fields in which the rewards are so high as in the treatment of edema if the correct measures are applied in the correct way.

I find it very helpful in my own thinking to start with the proposition

TREATMENT OF EDEMA

BY DRUGS

A SYMPOSIUM, REPRINTED WITH PERMISSION FROM
THE NEW YORK STATE JOURNAL OF MEDICINE
VOLUME 44, NUMBER 3.

that edema is not simply an accumulation of water in the body, but the accumulation of a solution of salt. Edema fluid is an increased amount of extracellular fluid, and extracellular fluid is not only water but a solution of salts--about a 1 per cent solution of salt. Every 100 cc. contains nearly a gram of salts, composed chiefly of sodium chloride and to some extent of sodium bicarbonate. It is an alkaline solution with a pH of about 7.4.

This view of edema fluid is fundamental to the interpretation of the measures that are employed for reducing or abolishing edema.

The composition of this fluid is fairly constant and we cannot increase it or diminish it except by breaking down the balance by which its composition is maintained.

In the treatment of any case of edema there are at least six factors which come to mind at once. There are others, perhaps, but these are the important ones: (1) water; (2) salt; (3) acids; (4) measures for the diminution of the hydrostatic pressure; (5) digitalis, if it happens to be a case of heart failure; and (6) organic mercurials.

The prevailing practice with respect to water in the treatment of edema is to restrict water intake. There must be relatively few patients who are treated for edema at the present time without restriction of water, and this in spite of the fact that the best evidence indicates that there is no primary trouble in the excretion of water in most patients with edema. The patient with heart failure or with nephritis seems to retain a high capacity to excrete water, and it does not seem to matter whether he takes in 800 cc. or 3,000 or 4,000 cc. of water. He excretes it all, provided certain other conditions are met. There is fairly satisfactory evidence that the administration of water, plain water, to a patient with edema may not only fail to increase the edema, but that if enough water is given, the edema may diminish. That may well be

The patient receives the diuretic to clear the edema, and then is allowed to carry on without it until fluid again accumulates.

How often should the dose be repeated?

How often may it be repeated? We secure part of our information from the speed of excretion of the organic mercurials. If the dose is excreted completely in less than twenty-four hours, it may be repeated every twenty-four hours. It is often not necessary to give a dose as frequently as that, but it may be so given. By the method of trial and error, one decides in any given case whether the dose should be given once a day, once every other day, once every third or fourth day, or once a week.

The best guide to the proper interval is the body weight of the patient. The daily weight is probably a better indication than the more troublesome fluid intake and output measurements. The interval should be such as to maintain the weight at the low resistant level to which the early doses reduced it. Other symptoms are also useful as guides.

With respect to the group of cases for which the mercurials are reserved, I said that most physicians hold off giving organic mercurials by reason of the fact that they wait for an enlarged liver, edema of the legs, or rales in the lungs. There is a very large group of patients with failure of the left side of the heart who have neither edema of the legs, enlargement of the liver, nor rales, but they have edema of the lungs which may give no rales. These patients are short of breath. They may be subject to paroxysms of nocturnal dyspnea. They may be able to do a day's work but from time to time develop an attack of pulmonary edema. They have an elevated circulation time of the lungs, an elevated venous pressure in the pulmonary circulation. They are patients with failure of the left side of the heart. This group of individuals obtains very little help from digitalis. In this group, the organic mercurials if used by a system involving first the production of the full effects and then the maintenance of these effects by appropriate doses at appropriate intervals, produce results which in every way equal the striking and dramatic results of digitalis in the classical case of early heart failure with auricular fibrillation.

The point I want to emphasize again is this: There is a large field for the use of the organic mercurials in the treatment of a group of patients commonly overlooked, in whom there is failure with congestion but who do not show the classical signs which we ordinarily associate with congestion: edema, rales, liver enlargement, and swelling of the legs.

Dr. Cattell: I want to call on Dr. Modell in a moment, but perhaps we might first see whether there is any disagreement with what Dr. Gold has told us.

Dr. C. H. Wheeler: I should like to

challenge Dr. Gold on the omission of two things from his list, and the first of those would be protein, because it is my impression that there is a group of patients who have edema in association with or because of hypoproteinemia, in whom all other measures may be completely ineffective until proteins are restored to normal. In other words, there are patients in whom repeated plasma infusion may produce a much more dramatic diuresis than any of the measures which Dr. Gold has emphasized.

Second, I wonder why you have omitted the caffeine-theophylline-theobromine group of diuretics from your list, because it is my impression that they may be very useful. I am sure we have many patients on the ward who have been digitalized and brought to a basal level, so to speak, who continue to show diuresis when given theocalcin in daily doses.

Dr. Gold: The first measure--the use of protein--I omitted by reason of the fact that I was listing only the measures which apply to the vast majority of cases. There is no doubt of the importance of protein. However, one does not very often encounter a patient with edema in whom the administration of protein is a solution to the problem. There are, of course, some such cases. There are other relatively rare ones; for example, the wet beriberi, treated with thiamine.

The other omission, the xanthines, is made purely with malice aforethought. I wanted to emphasize the surpassing importance of the organic mercurials as diuretics by mentioning only them, and to emphasize the relative lack of importance of the other diuretics by omitting all mention of them. The mercurial diuretics give us trouble. They have to be injected usually. If some of the solution spills into the perivenous tissues a painful nodule forms and phlebitis may result. For these and other reasons we tend to drift toward other oral diuretics. It is mighty uncommon in my experience, however, that one is able to carry a patient along satisfactorily by means of any one of the xanthines orally. I refer now to patients who have recurring edema and in whom we have proved continued dependence on a diuretic action.

When I give the xanthines in such doses as patients can tolerate they rarely show more than a slight effect on the edema. As soon as the doses are raised sufficiently to give effective diuresis, after four or five days, they develop so much trouble in the form of vomiting, cramps, diarrhea, and nervousness as to make it impossible to continue. This applies to the whole group of the xanthines. As for the acid-forming diuretics, they also are not very effective. They produce some loss of edema, but as soon as the doses are increased to 8 or 10 Gm. a day, where their efficiency is fairly high,

*Digitalis purpurea
vulgaris*



they begin to behave like saline laxatives.

Dr. Wheeler: It is not my thought that the xanthines and ammonium chloride should ever be used instead of the mercurials, but that they may often be used in addition to the mercurials. In other words a patient may get rid of his edema faster if he is subjected to salt deprivation, the administration of ammonium chloride, the daily administration of theocalcin, and the administration, say, of mercupurin every third or fourth day. On such a regimen he will lose edema somewhat faster than with the mercurial alone. Would you take issue with that?

Dr. Gold: I would take issue with that as a routine. In a patient with heart failure, my own way is as follows: let him have all the water he wants to drink. Tell him to put no salt in his food. That is one way of securing moderate salt restriction since there is still some salt in his food although he adds none. Digitalize him fully. If all the edema does not disappear, then begin the use of the organic mercurial. Adjust the dosage and frequency of repetition until the edema all goes. After these measures there is little that can be accomplished by adding ammonium chloride or the xanthines in the vast majority of cases. There are occasional cases in which ammonium chloride may be tried if the effect by the mercurial alone is incomplete.

Dr. Modell showed that after the organic mercurials, ammonium chloride may make about a 15 per cent contribution to the diuretic effect. In the large majority of cases it is unnecessary. The system I suggest has the merit of simplification of therapy with the most effective agent used first, and usually alone.

Dr. Eugene F. DuBois: May I ask, are there any serious disadvantages in making a patient lose the edema too fast by too much diuresis?

Dr. Gold: Yes, indeed! Excessive diuresis causes many symptoms. The patient may vomit. He develops intense weakness

and prostration, with soreness and cramps of the muscles. He is often quite sick. These patients behave very much as those with so-called water intoxication, probably owing to the excessive loss of salt in proportion to the loss of water. I think it is a good plan to adjust dosage so as to avoid securing more than about 2 extra liters of urine per day in an edematous patient. Perhaps we could put it better this way: Avoid the loss of more than about 3 to 4 pounds per day. With the loss of more than that the incidence of disagreeable symptoms rises sharply.

Dr. David P. Barr: In listing the dangers of rapid diuresis, should it also be mentioned that the sudden loss of edema fluid in cases of nitrogen retention may lead to uremia?

Dr. Gold: Yes, indeed, I think that is an important point.

Dr. Ephraim Shorr: That calls attention to a numerically small group, but one that is difficult to deal with therapeutically. I refer to patients with edema associated with Bright's disease. In these, oliguria occurs in association with low carbon dioxide combining power. It is often necessary to raise the carbon dioxide combining power by giving sodium lactate or sodium bicarbonate before diuresis is possible. An excellent diuresis can be achieved by just that one measure alone. Conversely, those patients should under no circumstances receive acids.

Dr. DuBois: I remember also that some of our patients complained bitterly that they could not get any sleep at night. They were too busy passing urine.

Dr. Gold: I think that is a practical and important matter. One ought to give the organic mercurials in the morning and not at night. The patient then gets through with most of the business before bedtime.

Dr. Cattell: Perhaps we might now hear from Dr. Modell.

Dr. Walter Modell: In evaluating the difficulties which have arisen following the administration of the mercurial diuretics, the large number of patients and the type of patients receiving these drugs should be considered. Not only is the use of these drugs very extensive, but many of the patients who receive them get them repeatedly, and by now there is a rather large group which have received well over 500 injections. In addition, as Dr. Gold has pointed out, it is the practice of many physicians to give mercurials only to those patients who are urgently ill; the type of patient in whom sudden death is not an uncommon occurrence.

The toxic symptoms which follow the use of mercurials may be divided into three categories. I give them in the order of increasing importance. First, the symptoms of mercurialism; second, the immediate symptoms due to idiosyncrasy; and third, the

the delayed symptoms due to salt loss.

The symptoms of mercurialism include stomatitis, colitis, renal damage--findings which are usually associated with the administration of ionic mercury. In the diuretics, mercury is in a nonionized organic form, is rapidly excreted, a large part of it within six hours, and practically all of it within twenty-four hours.

The recorded number of authenticated cases of mercurialism following the use of the organic mercurial diuretics is very small indeed. But because of the possible danger of renal damage a special note of warning is usually sounded concerning their use in patients with renal disease. However, it is a practice with many clinicians merely to use these drugs with greater caution in patients with renal disease. It is difficult to avoid their use entirely in patients with renal damage, since renal damage is a common finding in many chronic cardiacs, especially those with arteriosclerosis.

Immediate symptoms following the mercurials which may be ascribed to idiosyncrasy or hypersensitivity include dizziness, weakness, substernal oppression, dyspnea, collapse, change in cardiac rhythm, and death.

Until relatively recently it was said that there had been no death immediately following the intravenous administration of mercupurin to cardiacs. The fact that a handful of such deaths have since been reported serves to emphasize that these occurrences are relatively rare, and also to indicate that such things may occur.

It is important to note that sensitivity to the mercurials may apparently develop after many injections and without previous warning. One patient who died received some forty injections of mercurial diuretics without symptoms prior to the last one. However, in three of four cases there was a warning. In one there was transient heart block; in another, substernal oppression; in another, the patient complained of a "very peculiar feeling" after his injections.

We have under observation now a man who about a year ago, after receiving some twenty or thirty weekly injections of mercupurin, suffered marked dizziness and weakness after 2 cc. of mercupurin administered intravenously. Spontaneous recovery occurred in an hour. The following week the patient was given half the dose, 1 cc. A similar episode of less severity followed. Since that time he has received over fifty weekly injections of salyrgan-theophylline without reaction. In instances in which symptoms of idiosyncrasy or sensitivity have appeared it may be possible, therefore, to avoid repetition by the use of another mercurial diuretic.

The most frequent symptoms are those which appear the day after the injection.

They are due to the diuresis which is produced by the mercurials and are most pronounced after massive diuresis. The large amount of urine, as Dr. Gold explained, which flows out of the body as a result of the mercurials washes away with it a considerable amount of chlorides and other electrolytes. Such patients usually suffer from electrolyte imbalance and symptoms similar to heat cramps may develop. These symptoms may be prevented and relieved by the use of ammonium chloride.

Redigitalization also has been advanced as a possible source of difficulty after massive diuresis. It has been explained that the mobilization of edema fluid may liberate at the same time digitalis bodies which have been stored in it. Although attention has been directed to this phenomenon for many years, proven cases are difficult to find in the literature. I mention it here merely for the sake of completeness.

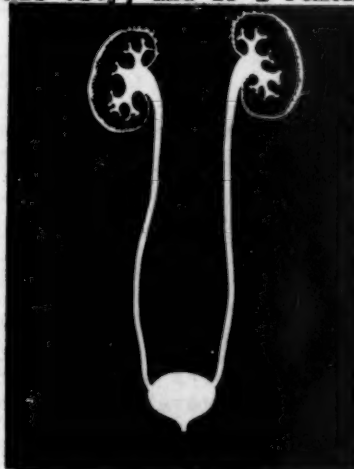
Dr. Cattell: Are there further questions or discussion?

Intern: The statement is sometimes made that following an injection of mercupurin there is a very rapid hemodilution with increase in circulating blood volume. I wonder what data we might have on that subject, because this has often given pause in treating a patient with coronary occlusion.

Dr. Gold: That question has been debated and I would say that the opposing reports on the subject are about equally balanced at the present time.

The story started with the notion that the organic mercurials exerted an extrarenal action. What they did first was to liberate water and dilute the blood. This motivated the diuretic cycle. After a few years workers began to fail to find hemodilution. It seems probable that if there is a hemodilution it is very small, and should prove no bar to the use of the mercurial in coronary occlusion.

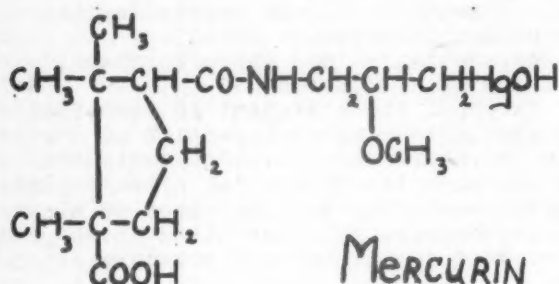
Dr. DuBois: Not so very long ago, when I was an intern, there were various methods of treating edema in one of the best hospitals in this city, and if I remember rightly



they occasionally put plasters of belladonna or plasters containing digitalis over the kidneys. They exposed the patients to hot air in bed tents and used wet packs. Then there was the method of extreme catharsis.

It might be interesting to review the manner in which these therapeutic measures were finally disposed of. I think some of them are still used.

Dr. Gold: I should not be surprised if all of these measures promoted sweating of either the whole man or a part of him. That might increase the salt loss and anything which increases the salt loss tends to decrease edema. They must have been quite ineffectual, however, by comparison with the heavy artillery which we now employ.



Beyond doubt, the saline cathartics have value. The saline cathartics act chiefly by holding fluid in the intestine. The patient takes a small dose of a saline cathartic and then passes the equivalent of a quart enema. He loses water and probably salt as well. But again, I think that by comparison with what we use today, these measures must have proved very feeble. Dr. DuBois, you would know better than I how effectual they were.

Dr. DuBois: As interns we were impressed chiefly by the fact that the edema did not disappear, but also that the patient was made extremely uncomfortable. When a patient with heart disease and nephritis was put in a hot pack and left there for several hours he was most uncomfortable, as a normal man would be.

Those who were subjected to vigorous catharsis had to spend a considerable amount of energy on the bed pan.

I think it was Dr. Henry Christian, was it not, who pointed out the advantages to the neighbors if the kidneys were used instead of the bowels? He has some classical quotations on that.

Dr. Shorr: Is the elimination of mercurials impaired in renal insufficiency? Does twenty-four hours suffice for the elimination of an average dose of 1 cc. of mercupurin?

Dr. Modell: There are some data indicating that twenty-four hours suffice in normal men and animals, but I am not sure of the proof for the statement that in the presence of oliguria a longer time may be required.

Dr. Gold: I don't believe there is any satisfactory indication that cumulation of the mercurial occurs with a daily dose of mercupurin if a reasonable urine output is maintained, such as 1,000 cc. a day.

Dr. Modell: Dr. Gold, if a patient with edema who has a fair urine output shows no increase of urine after the mercurial, would you be concerned about the possibility of retarded elimination of mercupurin?

Dr. Gold: I think it does not take much urine to excrete a dose of organic mercurial. If the patient is not passing any urine that is another matter. If there is anywhere near a normal urine excretion, even though no diuresis results from use of the drug, there is virtually no danger of accumulation of the organic mercurials with the usual plans of administration. There is much too much fear about the possibility of such danger, as the result of which the drug is withheld when patients are badly in need of it.

Dr. Robert F. Pitts: Your emphasis, Dr. Gold, seems to be a primary attack on salt excretion. Do you think that an attack on water excretion carried out simultaneously might possibly reduce some of the disagreeable symptoms which are described for excessive salt loss? In other words, combine some osmotic variety of diuretic substance to pull out water at the same time that you get the water out indirectly by salt loss?

Dr. Gold: You mean that one should avoid the disproportion between salt and water which gives rise to the disagreeable symptoms? That sounds like a good idea, and it might conceivably be done by simultaneous use of urea or glucose.

Dr. Wheeler: Dr. Gold, I should like to nag you a little more about these other substances. I want again to refer to the point that there are patients who for one reason or another find it difficult to see the doctor every day or every second day or every third day for a mercurial injection, and I wonder if you would not admit that the xanthines might be useful in those cases. Then I want also to ask you about urea. Some of us around the hospital have felt that in the past urea has often served as a useful diuretic. The chief objection to urea on the part of the patient is the awful taste.

Dr. Gold: Dr. Wheeler, I could not very well grant your point about the xanthines without spoiling my thesis. I would say this: if the daily injection becomes a difficult problem, one can do better than use the xanthines. Try out the rectal suppository of salyrgan with theo-

phylline or the mercurin suppository. There are more individuals whose rectum will tolerate these for some time than there are whose stomachs will tolerate effective doses of the xanthines. I shared the view which you hold about the xanthines once upon a time. I have abandoned it.

Dr. Modell: Dr. Gold, do you think we might mention the salyrgan with theophylline tablet which is now on the market? In my experience one case in twenty tolerates an effective daily dose. If the dose is large enough it is diuretic.

Dr. Cattell: Dr. Shorr, I think you had a question.

Dr. Shorr: Is there any validity in the use of potassium chloride as a salting agent for patients who are on sodium restriction?

Dr. Gold: Yes potassium chloride, while not possessing quite the savor of sodium chloride, is nevertheless welcome to the patient on salt restriction. It makes the food more palatable.

Potassium chloride is itself a diuretic and there are some studies showing that very effective diuresis can be produced by 5 or 10 Gm. of potassium chloride given daily to certain patients with edema, particularly in nephritis with edema. The mechanism of potassium chloride diuresis is not entirely clear. When one gives potassium salts, one factor may well be that the kidney, being partially blind to the difference between potassium and sodium, excretes base, and in that way takes out a large amount of sodium. The loss of sodium, of course, leads to the mobilization of water from the extracellular spaces.

Dr. Shorr: It is my impression that in Bright's disease with insufficiency the potassium content of the blood is likely to be lowered.

Dr. DuBois: I should like to ask Dr. Gold about the diuretic effect of rest in bed.

Dr. Gold: The diuretic effect of rest in bed is very considerable. There are many patients with heart failure and edema who as a result of rest in bed alone develop active diuresis, and the edema disappears. Complete disappearance of the edema from rest in bed alone is not the rule, but a high degree of improvement is. The more advanced the failure, the less complete is the improvement from rest in bed alone. The response to rest in bed provides information of prognostic importance.

Dr. Cattell: It would be interesting to have a brief statement from Dr. Modell regarding the optimal doses of mercurial diuretics, a problem which he has investigated.

Dr. Modell: We compared different doses in the same patient. We found that



while a large dose gave a larger total diuresis, a small dose gave more diuresis per cc. of the drug than a larger dose. Also, two small doses gave more diuresis than one large dose. Patients were much happier when given 1 cc. of mercupurin, say on Wednesday and Saturday, than 2 cc. one day a week. They did not accumulate so much edema in the case of the two smaller doses. They did not suffer as much from dyspnea and sleeplessness. Nor did they suffer as much from cramps and other effects seen in the case of massive diuresis. All the results point to the advantage of smaller doses repeated at short intervals over larger doses once a week. It is important to try to maintain a daily water balance instead of a weekly one.

Dr. Cattell: Are there further questions?

Dr. Walsh McDermott: I should like to add that the emphasis which has been put on the use of the organic mercurials in the absence of dropsy is in line with what we have been teaching. Medical students don't seem to grasp it for some reason. I am glad to see the idea re-emphasized at this conference.

There is one group of patients who have paroxysmal nocturnal dyspnea who cannot be treated daily. Incredible as it may seem, many of them are working, and an oral diuretic which would reinforce the action of the intravenous mercupurin is essential in that group of patients, but not in the dropsical ones.

Dr. Gold: I should certainly agree to that. An oral diuretic which would reinforce the parenteral one would certainly be valuable.

Dr. Shorr: Do you use ammonium chloride?

Dr. Gold: Yes, we use ammonium chloride. It adds something to the efficacy of the organic mercurial. Its contribution to the diuretic result is, however, relatively small. It does not fully meet the need for an oral diuretic.

As for the xanthines, we have given them in a routine fashion to patients with edema, but on examination of our experiences,

we have come to doubt whether they are worth the trouble.

Dr. McDermott: We have used them very little.

Dr. Gold: I am in full accord with the view that an oral effective diuretic is desirable. My point is, however, that little dependence can be placed on those that we have.

Dr. Wheeler: We have had just the opposite experience, Dr. Gold, because we have had patients who have been in the hospital for a month or six weeks and were thoroughly digitalized. After they seemed to have reached a state where nothing further could be expected from bed rest and other measures, they were given theocalcin, a gram four times a day. This would carry them along over a period of several weeks without the toxic effects you describe, and would produce an increase of urine volume, from 600 to 700 cc. to 1,000 and sometimes even 1,500 cc. a day, so that we were convinced that some of these substances were useful.

Dr. Gold: The xanthines are diuretic agents. There is no doubt of that. Some years ago Dr. Goldring published a study from Bellevue Hospital in which he showed in well-controlled experiments that large doses of xanthines daily produce good diuresis in bed patients with heart failure.

The large doses which are necessary for such effects cannot be continued for any length of time. The ambulant patient who is seriously ill and likely to go downhill rapidly if active diuresis is not maintained cannot in our experience be carried along satisfactorily with the xanthines.

We have a fairly large group of such patients in our clinics and matters went very badly until a system was worked out by which they were able to secure injections of the organic mercurials. The xanthines do such a questionable job that in an account of effective diuretics I believe that it is justifiable to emphasize their relative ineffectiveness by omitting them from consideration. In such cases as the type you cited, Dr. Wheeler, I wonder whether you could be certain that they would not get on equally well without the theocalcin. I might add that I have little doubt that an occasional patient might be encountered who is very sensitive to the diuretic action of the xanthines and may be benefited by them. My own experience indicates that these cases must be rare.

The prevailing practice seems to be to try one of the xanthines or other oral diuretic first and to struggle along with them for a long time. In the case of patients who are badly in need of active diuresis we practically always in the end fall back on the drugs which really help, namely the organic mercurials. That being the case, I should like to urge their

use in the beginning.

SUMMARY

Dr. Gold: We may now summarize briefly the chief points of this discussion on the drug therapy of edema.

Great progress has been made in this field of treatment. Physiologic objectives have been more clearly defined. There are at least five important measures which require consideration in every case of edema: water, salt, acids, digitalis, and diuretics. There are, in addition, special problems which may require particular measures, such as rest in bed as a means of reducing hydrostatic pressure, thiamine in the edema of beriberi, and high protein intake for the edema of nutritional origin.

Edema fluid is not only water but a solution of salts of which sodium chloride is the most abundant. Patients excrete water very quickly, but if the water is given with salt it is retained for a long time and deposited in the tissues in the form of edema. Water restriction is widely practiced. It seems to be unnecessary. What is necessary is salt restriction. If that is done, the patient may take as much water as he desires. Some cases of edema require only one of the measures listed above; other cases require all of them.

Saline cathartics and vigorous sweating have been used in the past for the purpose of reducing edema but they are not sufficiently effective to play any part in the modern treatment. The xanthines, such as theocalcin and theophylline, received some defense as useful diuretic agents, but the view was also expressed that it is so rare to find patients who can take large enough doses without gastrointestinal symptoms that it is better to apply the mercurial diuretics from the beginning rather than the oral diuretics which, in the experience of some, do not give sufficiently consistent results to warrant their trial in the average case. The details of the use of mercupurin or salyrgan with theophylline were discussed. Smaller doses (1 cc.) at more frequent intervals are more effective than larger doses (2 cc.) at less frequent intervals. They may be given daily without danger. There have been some deaths from the mercurials, but on the whole their danger is small when one considers their extensive use. Excessive diuresis is to be avoided because it is likely to produce nausea, vomiting, prostration and muscular cramps. These may be controlled by the use of smaller doses of the organic mercurials. Ammonium chloride in doses of about 4 to 8 Gm. daily enhances the effectiveness of the mercurial diuretics by an average of about 15 per cent, but most cases do sufficiently well without it. The mechanism of the action of the organic mercurials was discussed. There seems to be no contraindication to their use, and the danger of poi-

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Kenneth Earl Anderson
Methodist Hospital, Indianapolis, Ind.

Lucille Winkler Bendon
Jennie Edmundson Hospital,
Council Bluffs, Iowa

S. George Brown
State Hospital, Concord, N.H.

Helen Manion Campbell
Oil City Hospital, Oil City, Pa.

John A. Childress
200 N. Horton, Philadelphia, Pa.

Vera Cianfrogna
Pennsylvania Hospital, Philadelphia, Pa.

S/Sgt. Jack Cohen
P.D.W. General Hospital #2
Camp Forest, Tenn.

Lt. Leo J. Collins
Gardiner General Hospital, Chicago, Ill.

George A. Cowan
General Hospital, Greenville, S.C.

Jennie Cutler
Orange Memorial Hospital, Orange, N.J.

Arthur W. Dodds
Lynn Hospital, Lynn, Mass.

C. Elizabeth Elliot
Seattle General Hospital, Seattle, Wash.

William E. Evans, Jr.
Nesbitt Memorial Hospital, Kingston, Pa.

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Veterans Hospital, Alexandria, La.

Mrs. Grace P. Neckerman
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Elve Louise Newman
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Margaret Norris
Charity Hospital, New Orleans, La.

Irene Janet Ostrowski
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AAF Regional Hospital Pharmacy,
Maxwell Field, Alabama

Adela Annie Schneider
Southern Pacific Hospital, Houston, Texas

Leslie H. Seright
Oak Ridge Hospital, Oak Ridge, Tenn.

Edward Roy Seuffert
Blodget Memorial Hospital,
Grand Rapids, Michigan

Sister Mary Adamar
St. Joseph's Hospital, Lancaster, Pa.

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Sister Mary Oliver Kelly
Mercy Hospital, Chicago 16, Ill.

Sister Alphonse Marie McKinzie
St. Mary's Hospital, St. Louis, Mo.

Sister Florence Mason
St. Paul Hospital, Dallas, Texas

Sister Mary Amadeus Mulcahy
Mercy Hospital, Chicago 16, Ill.

Sister Mary Gentille Olender
Nazareth Hospital, Philadelphia, Pa.

Donald M. Skauen
The Children's Hospital, Boston, Mass.

Paula Louise Slaughter
John Sealy Hospital, Galveston, Texas

W. B. Smith
Stuart Circle Hospital, Richmond, Va.

Zennie Stauffer
State T. B. Hospital, Salem, Oregon

Francis X. Sturner
Buffalo General Hospital, Buffalo, N.Y.

John F. Wilcox
832 Washington St., Watertown, N.Y.

CURRENT LITERATURE continued from page 36

Ann Arbor, Michigan. - A brief history of the growth of the American Society of Hospital Pharmacists from its beginning as a subsection of the American Pharmaceutical Association in 1936. Also, the objectives of the organization are given.
page 77

"Hospital Pharmacy Economics" by Hans S. Hansen, Chief Pharmacist, Grant Hospital, Chicago. - Information concerning the value and importance of maintaining records that will depict your progress and convince the administrator of the value of your department.
page 78

JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION (April, 1945) Practical ed. Symposium on Penicillin.

AMERICAN PROFESSIONAL PHARMACIST (March, 1945)

"Buying Control by a Card System" by Elsie M. Coons, pharmacist, Menorah Hospital, Kansas City, Kansas. - A method to control buying by establishing a stock control system using cards. page 250

Treatment of Edema (continued from p. 56)
soning, even in renal disease, is negligible if a fair urine output is present. The weight of the patient is a useful guide in the treatment with the organic mercurials and one of the plans suggested was to give the mercurial at frequent intervals, even daily, until the weight declines to a resistant level at which it may be maintained by doses at longer intervals. In cases in which injections are not feasible, an attempt should be made to control the condition with the rectal suppository or the oral tablet of the diuretic.

The mercurial diuretics are frequently reserved for patients with frank signs of edema such as rales, swelling of the legs, or ascites. Attention was called to the large field of usefulness of these diuretics in failure of the left side of the heart, in which none of these signs may be present, but in which the patient is subject to attacks of pulmonary edema and paroxysms of dyspnea. In these the appropriate use of the organic mercurials produces therapeutic results which are unobtainable with any other measures.

NOTE: THESE ARE REPORTS OF CONFERENCES BY THE MEMBERS OF THE DEPARTMENT OF PHARMACOLOGY AND THE DEPARTMENT OF MEDICINE OF CORNELL UNIVERSITY MEDICAL COLLEGE AND THE NEW YORK HOSPITAL, WITH COLLABORATION OF OTHER DEPARTMENTS AND INSTITUTIONS. THE QUESTIONS AND DISCUSSIONS INVOLVE PARTICIPATION BY MEMBERS OF THE STAFF OF THE COLLEGE AND HOSPITAL, STUDENTS, AND VISITORS.

PHARMACIST WANTED: St. Elizabeth Hospital 1044 Belmont Avenue, Youngstown, Ohio would like to hire a hospital pharmacist, an assistant to the chief pharmacist. For further information please write to Sister M. Baptista, Personnel Director.

WASHABLE OINTMENT BASES, continued from page 33

used to produce either washable (oil-in-water) or absorption (water-in-oil) bases. It is entirely possible that these and other agents will bring about profound changes in this field in the future.

Characteristic of all washable bases is their propensity to lose water when exposed to the air. It is, therefore, necessary that they be kept in tightly stoppered containers since dehydration may completely alter their desirable characteristics.

KWEIYANG PHARMACY, CONTINUED FROM PAGE 42

solutions are prepared by the pharmacy.

A part of the staff office is used for keeping records.

The store room is separated from the other four rooms so that it is safe. All the medical supplies of the entire hospital are kept inside this room. A stone cave within the hospital furnishes storage for the inflammable material, e.g., alcohol benzine, and ether. Ointments are stored in enamel and porcelain jars, while the liquids are stored in conventional five- and one-gallon containers.

We have no bottleshower; therefore, everyone washes his own laboratory equipment. For drying bottles, we rinse them with alcohol, which is very easy to obtain. (Incidentally, we are not required to keep a record of the alcohol we use.)

There are one registered and three graduated pharmacists at the hospital; (According to the regulation of the government, the pharmacist can become registered two years after graduation from the colleges which are now located in the Interior.) Most of the staff come from Chungking. Two of the four technicians also are Chungkingese. The chief pharmacist is responsible for the whole pharmacy to the hospital superintendent and supervises all the workers. The other three pharmacists work individually in the manufacturing, sterile solution preparations, and dispensing rooms and are assisted by the technicians, one of whom served as storekeeper. All pharmacists are employees of the government. There are no American pharmacists at the hospital. We do employ two women pharmacists.

Naturally we have a reference library. The first edition of the Chinese Pharmacopoeia was published in 1930; it is now in its second revision. The Chinese Pharmacopoeia is similar to the BP and USP; however, it contains many more crude drugs and is printed in Chinese. It seems pertinent to mention that all prescriptions are written in English and in the metric system. A few of the older physicians still use the apothecary system of weights. In addition to the Chinese Pharmacopoeia, the important books for reference are as follows: the USP, USD, NF, NNR, The Art of Compounding-Scoville, The Practice of Pharmacy-Remington, The BP, The BP Codex, The Extra Pharmacopoeia, and the Art of Dispensing (British).

Since transportation and importation are very difficult (supplies are flown to a nearby airport), the source of supplies is centered in the Emergency Purchasing Committee of Medical Supplies, National Health Administration, Chungking. This is a special wartime organization which purchases medical supplies from the United Nations to supply the different medical centers in China. The hospital can share

a part of them by the payment according to the official rates.

Some of the diseases we treat in the hospital are as follows: malaria, typhus, typhoid, tuberculosis, dysentery, kala-azar, schistosomiasis, and trachoma. Vaccinations are compulsory and we give inoculations for smallpox, diphtheria, typhoid (TAB), typhus, and cholera. We keep the vaccines in an icebox which must have its supply of ice replenished every day. The nursing service handles the diets.

Baby Oil (continued from page 30)

OXYQUINOLINE BASE	0.1 %
LILACINE PERFUME	0.06%
CORN OIL	24.0 %
LIGHT LIQUID PETROLATUM	
VISCOSITY (65-75) QS TO 100.0 %	

ANOTHER FORMULA USED IS AS FOLLOWS:

OIL OF ROSE	0.25%
OIL METAPHEN ABBOTT	
1:1000	3.0 %
CORN, OR COTTONSEED OIL	25.0 %
LIGHT LIQ. PETROLATUM QS 100.0 %	

FLACK AND CLARKE⁵ OF THE NEW YORK HOSPITAL HAVE DEVELOPED AN OIL-IN-WATER EMULSION WHICH THEY FEEL IS SUPERIOR TO AN OIL. THEY POINT OUT THAT DEBRIS TO BE REMOVED FROM THE SKIN OF NEW-BORN INFANTS IS, IN PART, WATER SOLUBLE AND, IN PART, OIL SOLUBLE, CONSEQUENTLY AN EMULSION MAY BE EXPECTED TO SERVE THE DUAL PURPOSE OF REMOVING BOTH TYPES OF DEBRIS SIMULTANEOUSLY. THEIR FOLLOWING FORMULA HAS BEEN ACCEPTED FOR INCLUSION IN THE NEW YORK HOSPITAL FORMULARY.

STEARIC ACID USP	4.6%
LANOLIN ANHYDROUS USP	6.3%
LIQUID PETROLATUM	
VISCOSITY 85	8.8%
SESAME OIL N.F.	1.1%
OLIVE OIL (OR SUBSTITUTE)	1.1%
TRIETHANOLAMINE	1.7%
ALCOHOL 95%	1.1%
DISTILLED WATER	75.3%

HEAT THE STEARIC ACID UNTIL MELTED, ADD THE LANOLIN AND THE MIXTURE OF THE THREE OILS WITH NO FURTHER HEAT. IN ANOTHER CONTAINER, BRING THE TRIETHANOLAMINE-WATER MIXTURE TO 70°C. ALLOW THE STEARIC ACID-LANOLIN-OIL MIXTURE TO COOL TO ABOUT 70°C., THEN ADD TO THE AQUEOUS PHASE SLOWLY AND WITH CONSTANT AGITATION. ADD THE ALCOHOL AFTER THE MIXTURE IS COOL.

REFERENCES:

1. DRUG AND COSMETIC INDUSTRY, JAN. '45:56, 1 p38
2. AMER. PRO. PHARM., JUNE, '42, 374
3. DRUG AND COSMETIC INDUSTRY, JUNE, '39:44, 6, 786
4. DRUG AND COSMETIC INDUSTRY, OCT., '41:49, 4, 594
5. AMER. PRO. PHARM., FEB., '43: 9, 2, 111

unique position with reference to his ability and desire to render professional service.

The future, however, holds forth some evidence of promise that the Hospital Pharmacy may be elevated from the cellar position, both with relation to its physical location and the mental attitude of the allied professions towards its function. As of a year ago, I reported that the American College of Surgeons had established certain rules and regulations regarding the conduct of the hospital with respect to the pharmaceutical services which were to be considered as a part of the hospital's accreditation. The persons charged with this program have seen fit to lay down specific rules and regulations, and have provided for certain educational programs which I feel is the problem of the Pharmacist to develop.

It therefore behooves us to be well informed regarding the trends of medical science. The simple fact that we are Registered Pharmacists under the statutes of any given state is not sufficient evidence that we have attained a degree of proficiency which will enable us to master a more complex scientific application of chemotherapy or biological indication in the treatment of disease. The past twenty-five years has witnessed an almost complete revolution in the practice of medicine, and we, who are of the past generation in formal training, will do well to return frequently to graduate study.

In 1628 Harvey discovered the circulation of the blood, thus opening the way for a new field of medication. Today blood is an active therapeutic agent, requiring meticulous preparation and equally exacting standards for preservation. The Pharmacist should possess a thorough knowledge of its therapeutic value, and should be familiar with the technique employed in its administration to the patient.

The priorities of the present day emergencies have increased the number of problems with which the Hospital Pharmacist will be confronted manifold. Other speakers of this program will direct your attention to these specific requirements, and it is sufficient here to say that their successful solution depends in direct proportion upon the individual's breadth of training in the allied fields of science. One might console himself with the mental reservation that these problems are impossible of solution, so why worry about them? Such complacency on our part predicates extinction and invites the program now practiced in the United States Army, wherein the medical technician in three months of training becomes the hand-maid of the

physician.

In order that such a program may not be extended into civilian practice, I suggest that the Hospital Pharmacist establish educational standards for his profession which will command the respect and admiration of professional men. As a minimum qualification, it would seem advisable that he possess at least a Bachelor of Science degree in Pharmacy, and, if at all possible, he should have received one or more years of graduate training covering such subjects as biochemistry, bacteriology, and pharmacology. It is not sufficient to know only the name and class to which a pharmaceutical preparation belongs, since such knowledge limits one to the field of merchandising. One should be familiar with its composition, its methods of preparation, its therapeutic indications, and its action upon the living organism.

The question of pharmaceutical manufacture is an ever present problem in a Hospital Pharmacy, not alone from the economic aspect, but more particularly from the standpoint of the therapeutic freedom which it affords an aggressive medical staff.

Physicians generally are totally unfamiliar with pharmaceutical procedures. It is therefore our responsibility to anticipate their needs in this field of endeavor and to recommend such modifications in manufacture as may enhance the usefulness of a therapeutic agent. We must become creative in thought and endeavor, rather than enslaved in practice.

SALARY SURVEY, continued from page 35

attempt to gather data for future studies on other problems of hospital pharmacy. Please cooperate. Fill in your questionnaire today and return it.

PHARMACISTS' WORK INCREASES

The additional value of the pharmacist is being brought to the attention of the hospital administrator by the ready adaptability of the pharmacist to meet emergency situations caused by a shortage of hospital personnel, according to Gabriel Brown, Chief Pharmacist at the Cleveland State Hospital. Mr. Brown states that at his institution the pharmacist is called on to assist in taking X-rays, prepare all stains and reagents for the clinical laboratories, make frequent calls to divisions reminding them to pick up prescriptions, more frequently visit nursing stations to see that supplies are properly stored and labeled, and in general become a "Jack of All Trades."